The conquest of infant mortality: the case of Hemsworth, 1871-1911

Thesis

UNRESTRICTED

LINDA MARGARET DAVIES
B.A. (Hons) OPEN – 1995

THE CONQUEST OF INFANT MORTALITY: THE CASE OF HEMSWORTH 1871-1911

THESIS FOR D.PHIL

SOCIAL SCIENCE

SUBMITTED ON
30TH SEPTEMBER 2006

Vol. 1

DATE OF SUBMISSION 31 DECEMBER 1987
DATE OF AWARD 2 AUGUST 2007

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

This thesis began as part of wider project undertaken by postgraduate students of the Open University looking at the decline of infant mortality during the period 1871-1911. The main primary source for this has been the Vaccination Registers which were produced to record vaccination of infants under the Vaccination Act of 1871. Under this Act vaccination against smallpox became compulsory for all infants. The registers therefore give us a unique opportunity to examine the data on all infants born during this period in the areas where the registers survive.

The district selected for this thesis is the Hemsworth district in the West Riding of Yorkshire. In 1871 the economy of the district was purely based on agriculture, but by 1911 several deep coal mines had been sunk in the area which had led to a rapid and steep rise in the population. This rise in the population was accompanied by an increase in infant mortality which grew from below the mean for England and Wales in 1871, to above the mean by the late 1890s. Unlike most of the rest of the country the IMR in Hemsworth did not actually begin to decline until 1905.

This thesis examines the causes of the high IMR through a comparison between a large village which grew to be a colliery township, South Kirkby, and those townships in the district which remained purely agricultural even after the sinking of the deep mines. A micro-study of one street in South Kirkby with a particularly high IMR facilitates a detailed examination of the households and the infant deaths which occurred there.

INTRODUCTION

This thesis began as part of a wider project on the decline of infant mortality, 1871-1911, undertaken by a number of postgraduate students from the Open University. The main source for the project was to be that of the Vaccination Registers which were established as a result of the introduction of compulsory vaccination of infants against smallpox in 1871. These registers formed a duplicate of the civil birth registers (see chapter 3). They have survived for some registration districts and not others and are also more complete in some areas than others. The ones selected for this thesis are those for the Hemsworth Registration District in the West Riding of Yorkshire (see chapter 2). There were three main reasons behind the selection of Hemsworth; firstly the excellent run of Vaccination Registers, secondly the relative proximity of the district and the relevant archive office to the home of the author, and thirdly Hemsworth was particularly interesting in that the infant mortality rate (IMR) did not begin to fall immediately after the turn of the century (as was the case for England and Wales). In fact it remained at a high level until 1905 after which it began to fall. The main aim of this research therefore was to try and discover why infant mortality in Hemsworth did not begin to decline in line with that for the rest of England and Wales. As a result of the research it soon became apparent that after the opening of the collieries infant mortality began to rise in those townships which were inhabited by the miners and their families. At the same time infant mortality remained at roughly a constant level in the townships which remained purely agricultural. A further aim was therefore to attempt to prove that the rise in the IMR in the colliery townships was largely a result of the unplanned, rapid growth in population which resulted from the opening of the pits.

Concern regarding infant mortality had been growing since the end of the nineteenth century. During the 1880s and 1890s the IMR was increasing in urban areas and at the same time marital fertility rates were falling. If Britain was to maintain its position in the world, both economically and militarily then, it was believed, she needed a large and healthy working class. Interest was heightened when concerns were raised about the physical condition of recruits during the Boer War. Over a quarter of those recruits were deemed unfit for service and this gave rise to consideration of the general health of the working classes.

Furthermore, demographically the secular decline of infant mortality was of great importance. Deaths of infants accounted for a substantial proportion of all deaths and the improvement in the IMR ensured that life expectation at birth was able to rise above 50 years for the first time *(Williams 1994: 185).* Mortality in general and child mortality had been falling since the 1870s but with no similar fall in the IMR. McKeown argued that improved nutrition had led to a decline in mortality due to tuberculosis and that this was the most important part of the decrease in mortality in Victorian England and Wales. However, others such as Szreter, have rejected the notion and stated that it was the role of public and social improvement that was the major influence in the nineteenth century British mortality decline *(Shelton 2000: 3),* although neither of these appear to have had much impact on the IMR until after the turn of the century. Eilidh Garrett says that high IMRs were more often attributed to poor mothering rather than the conditions under which they had to live and rear their children *(Garrett 1994: 18).*

Similarly, prior to the mid-nineteenth century there appears to have been little interest in paediatrics *(Lomax 1972: 61).* The first specialised children's hospital was founded by Dr Charles West at Great Ormond Street in 1852 and the sponsors of this hospital included Charles Dickens and the Bishop of London. In the 1860s, William Cheadle conducted a survey of paediatric teaching in the United Kingdom and found that only Aberdeen, Edinburgh, Manchester and Charing Cross in London gave systemic instruction in the speciality *(Lomax 1972: 69).*

The decline in infant mortality from the levels of the mid-eighteenth century was not a consistent, linear process, apart from in Norway and Sweden (*Rollet 1997: 38).* However, 1900 represented a significant turning point throughout the industrialised world. Until then the main thrust of the fight against infant mortality had been to encourage breast-feeding, the provision of a safe source of milk and, to a lesser extent, an improvement in the sanitary environment. However, after 1900 attention was increasingly turned in many countries to the role of mothers and the education of women and girls *(Rollet 1997: 40).*

As far as England and Wales was concerned, the experience of just a few large towns was sufficient to have an affect on national levels. By the 1880s over half of all infant deaths in England and Wales occurred in only 43 out of approximately 600 registration districts. London alone accounted for over 13 per cent of all infant deaths at that time *(Williams and Mooney 1994: 185)*

In 1871 Hemsworth district was comprised of a number of townships and villages, and was purely agricultural. Over the course of the next 40 years many of the townships there were transformed into sizeable colliery towns where coal mining was virtually the only economic activity. It is well documented that the infants of miners' suffered the highest IMR in the country despite the relatively high wages *(Woods 1994: 86).*

Chapter 1 reviews the history of infant mortality in England and Wales. The main causes of infant mortality and the varied opinions on the subject, both contemporary and up to the present day, surrounding this subject will also be introduced in this chapter. It also examines some of the schemes and approaches which were undertaken in an effort to reduce the very high infant mortality which existed at the time. Some commentators on infant mortality have emphasised the lack of a clean, safe supply of milk. Others have focused on environmental issues such as housing, overcrowding and scavenging. A further group of commentators have laid the blame for the high IMR firmly at the door of mothers. Although a wide range of factors which contributed to the high IMR during the period will be examined, those which had the greatest relevant to infant mortality in Hemsworth District, such as the environment, will be examined in greater detail. This chapter also includes a review and discussion of the relevant literature on the subject by a number of well known commentators from early twentieth century medics such as Newman and Newsholme, McLeary, Blagg, and Ashby through to the more recent authors such as Bob Woods, Naomi Williams, Simon Szreter and Chris Galley.

The Hemsworth Registration District is introduced in the second chapter with particular attention being given to the colliery township of South Kirkby and the agricultural townships which were selected as the focus of this research. This chapter gives a brief history of the area with one section being devoted to the relevant demography. In particular this chapter will examine the growth of the coal-mining industry in Hemsworth. This chapter also looks in some detail at how the social hierarchy changed in South Kirkby and how it differed from that in the agricultural townships. By 1901 over 80 per cent of heads of household in South Kirkby were coal miners, contrasting sharply to the situation in 1871 when there were none.

The various sources used to obtain the necessary data and other information are described in Chapter 3 as well as the different methods required to make a useful analysis. By far the most important source is that of the Vaccination Birth Registers without which this research would

not have been possible. The Vaccination Officer was obliged to follow up those infants who were not vaccinated and details of these are found in the Vaccination Report books which are cross-referenced to the Vaccination Birth Registers. Both of these are discussed in some detail in Chapter 3. Other sources which are surveyed in this chapter include the parish registers of baptisms and burials, minutes of meetings of the Sanitary Authority and the sanitary committee of the Rural District Council. The records of burials at Moorthorpe cemetery also formed a further valuable source discussed in this chapter as well as the Census Enumerators' Books (CEBs) and the reports of the Medical Officers of Health (MoHs). One book which is discussed and which has proved very useful is A Wilkinson's *'A History of South Kirkby'* (1979), particularly as it pointed the author in the direction of Faith Street, the subject of the micro-study which forms Chapter 6.

The major findings of the research are presented in Chapter 4. This firstly gives a brief history of infant mortality in Hemsworth, including tables to show fluctuations and changes in the IMR over the whole period in both South Kirkby and the agricultural townships. The reasons for the growing divergence between the IMRs for South Kirkby and the agricultural townships are explored, for example, by examining infant mortality at various locations. The results of the research detailed in this chapter are largely in line with researchers such as Woods who emphasised the importance of urban/rural differentials *(Woods, Watterson and Woodward 1988: 343-366)*. Details of some individual families in South Kirkby and the agricultural townships are given to illustrate the diversity of the fertility experience in the district and the effect which just one or two families could have on the IMR on a small population. This chapter also examines some of the demographic issues which may have been contributory factors. Some of the problems faced by the MoHs is introduced in this chapter and this is continued in Chapter 5 in the context of the sanitary environment of the district. The effects of seasonality are also explored in this chapter for hot, dry summers were implicated in a rise in the IMR during the summer and early autumn due to diarrhoea. However, it was not only the month of death which was important in this context, but also the month of birth *(Breschi and Bacci: 159).*

Chapter 5 concentrates on the impact of the environment on infant mortality in Hemsworth District. The first section describes the sanitary history of Hemsworth with particular reference to the sanitary authority and the first Medical Officers of Health (MoHs). This is followed by a section which examines the work of the two MoHs who were largely responsible for tackling

infant mortality in the district, Dr Coleman and Dr Wiltshire. They worked hard during a period of rapid growth and upheaval in the district to bring about an improvement in the health of the population. At times they (particularly Dr Coleman) faced disinterest and even opposition from the Sanitary Authority towards their attempts to improve the sanitary environment of the District. They also had to deal with the problem of infant mortality which became a major concern for the medical profession during their periods of office. The roles of the Sanitary Authority and the Rural District Council are also examined with their contrasting attitudes towards improving the sanitary environment.

Chapter 6 is devoted to a micro-study of one street, Faith Street, in the colliery township of South Kirkby. This street achieved notoriety even during the 1900s and had one of the highest IMRs in the whole of Hemsworth district. This micro-study was undertaken through detailed use of the vaccination registers, 1901 Census Enumerators' Books, minutes of the Sanitary Committee of the Rural District Council and some information from a member of the local community history society. It was noted when analysing the data from the Vaccination Registers that Faith Street had a particularly high IMR. However, it was a reference to Faith Street by A Wilkinson *(1979: 115)* in which he described it as 'that terrible place' which provided the incentive to undertake a micro-study of this particular street. The analysis of this street and its inhabitants enables us to get to know a lot about the families who lives there and their experiences of infant deaths. We will also observe the relationship between the owners of the houses and the rural district council and the impact which this relationship had upon the lives of the residents. These details will enhance our knowledge of infant mortality at a local level and enable us to see how and, perhaps why, this actually occurred in some families more than others. This is an important aspect of this thesis, for it is likely that the findings from this micro-study would be mirrored all over the country and gives us a glimpse of the lives of the people behind the pure statistics.

Chapters 4, 5 and 6 aim to show the reasons behind the rising IMR in the district. This is done partly through comparison with those townships in the district which remained purely agricultural after the sinking of the numerous deep pits in the area. The research has led the author to believe that the rapid and unplanned growth of the colliery towns in Hemsworth District, such as South Kirkby, exposed the inadequate sanitary environment of the district. The provision of housing, fresh drinking water, adequate scavenging and sewerage failed to keep up with this growth in population and it was largely this which brought about the rise in

the IMR in towns such as South Kirkby. On a number of occasions, Dr Coleman, MoH for Hemsworth from 1883 to 1906, pointed out that the services which had been sufficient for a low, scattered agricultural population were totally inadequate for more densely populated mining communities (see Chapter 4 and 5). However, as there were variations in the IMR in different locations within South Kirkby it would also appear that the people themselves, i.e. the miners who migrated into the area, were also partly responsible for the high IMR due to some of their habits. This appears to be in line with the findings of Alice Reid *(1997: 129-155) and* will be discussed extensively in chapter 4.

The conclusions of chapters 4, 5 and 6 are brought together in a final chapter which will attempt to answer the questions posed by the aims given in the introduction.

Finally, it is hoped that this thesis will be able to assess the value of the Vaccination Registers in the study of infant morality and also the contribution which a micro-study such as that undertaken on Faith Street (see Chapter 6) can make to further our knowledge of infant mortality.

1
INFANT MORTALITY IN ENGLAND AND WALES

Introduction

This chapter examines:

- the history of infant mortality in England and Wales;
- the work of the two most influential commentators on infant mortality during the early years of the twentieth century;
- some of the schemes and initiatives which were introduced in an attempt to reduce infant mortality;
- a review of the literature of infant mortality decline, from contemporary up to the present day.

It also identifies areas for more detailed discussion in subsequent chapters.

These issues will be discussed in the context of the coal mining community of Hemsworth, which is the subject of chapters 4, 5 and 6.

1.1 History of Infant Mortality

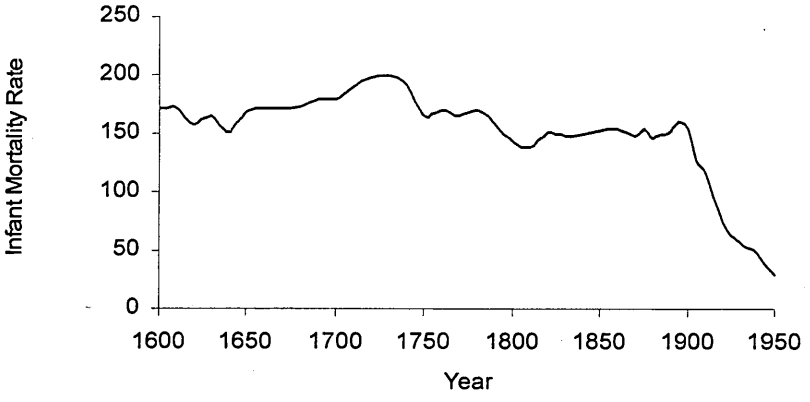
Infant and early child mortality rates are valued as indicators of the socio-economic well-being of a country (Haines 1995: 297). However, although obviously infant mortality has always existed, it was not perceived as a problem that could be rectified until the late nineteenth/early twentieth century. Thus, although from 1857 the number of deaths under one year was published by the Registrar General for the whole of the country, it was not until 1877 that infant deaths were specifically recorded as the Infant Mortality Rate (IMR).

> Until the end of the nineteenth century infant mortality was a problem of the biological realm; in the early twentieth century it became a problem of society *(Armstrong 1986: 211).*

Interest in infant welfare can be traced back to Jeremy Bentham (1748-1832), the philosopher who favoured political reform that would lead to the greatest happiness of the greatest number of people. He thought that public health could be improved by an efficient system of administration. His ideas were expressed in practice by Edwin Chadwick, a sanitary reformer born in Manchester in 1800 (*McLeary 1933: 4-5).* His work 'The Sanitary Conditions of the Labouring Population', published in 1842, expressed his views that such disease amongst the working classes was caused by the appalling living conditions, lack of clean water and inadequate drainage.

In 1905 one quarter of all deaths in England and Wales were under one year (*Newman 1906: 28).*

Figure 1.1: National Infant Mortality Rates, England 1600-1950 & Wales 1838-1950



Sources: 1600-1837 Wrigley et al 1997: 24 (Table 6.3); 1838-1950 Registrar General's Quarterly Returns

It is difficult to be certain about estimates for infant mortality prior to the advent of civil registration in 1837 as rates are mainly based on entries taken from parish registers which have often been shown to be an unreliable source, especially with regard to the baptism and burial of infants who died during the first week of life. The question of reliability has been widely debated by a number of demographers and social historians Galley, Williams, Woods and Razzell *(Galley, Williams, Woods 1995: 166-183).* Wrigley's data, which has been used to produce Figure 1.1, presents estimates from 26 parish reconstitutions and should be treated with some caution when extrapolating to the national level. There were, after all, around 10,000 parishes in England and the 26 parishes drawn upon by Wrigley were chosen for their suitability for family reconstitution, not their representativeness. However, Figure 1.1 does suggest that infant mortality rose in the latter part of the seventeenth century and began a general downward trend from the middle of the eighteenth. In the early nineteenth century this decline in the IMR began to slow down and eventually ground to a halt, even increasing again in some urban areas. Infant mortality in many urban areas was considerably higher than shown by the national rate in Figure 1.1. For example, according to figures produced by Dorothy George (using the Bills of Mortality), the mortality rate for children under two years of age (NB. not the infant mortality rate although encompassing it) in London in the period 1730-49 was 603 per 1000 baptisms. In 1750-1769 this figure was still high at 501 per 1000. This figure had fallen to 235 per thousand by 1810-29. Put simply, over one child in two, prior to the late eighteenth/early nineteenth centuries, did not live to

see its second birthday. These figures were confirmed by John Landers in 'Death and the Metropolis' *(Landers, 2005)*. Similarly, Bills of Mortality for Northampton revealed a mortality rate for children under two years in the town running at 401 per thousand baptisms in 1735-1749 and 240 per 1000 in 1790-1809. Thus, although infant and early child mortality was lower in Northampton than in London, the decline in infant and early child mortality during the eighteen century was quite similar *(Razzell 1998: 1-2)*.

During this period high infant mortality was not confined to the labouring classes. Indeed until the middle of the eighteenth century the IMR amongst the British peerage was comparable to that of the country as a whole (see Figure 1.1 and Table 1.1) despite the obvious advantages which wealth could bring, such as better nutrition and housing.

Table 1.1 Infant Morality Amongst the British Peerage, 1550-1949

Period	Infant Mortality Rate Infant Deaths per 1000 live births
1550-99	186
1600-49	195
1650-99	203
1700-49	168
1750-99	94
1800-49	75
1850-99	61
1900-49	34

Source: Razzell 1998: 3

Table 1.1 shows that, as with the general population, infant mortality amongst the British peerage rose in the latter half of the seventeenth century. However, after 1700 it began to decline and appears to have fallen much more quickly than that for the rest of the population, despite the fact that aristocratic babies would have rarely been breast fed by their own mothers, but would frequently have had a wet nurse whose personal hygiene may have left much to be desired.

Mortality overall began to fall from around 1870 in England and Wales *(Szreter 1988: 5)*. In the period 1871-80 the expectation of life at birth in England and Wales was 41.4 years for men and 44.6 years for women. By 1910-12 these figures had increased to 51.5 years for men and 55.4 years for women, a considerable improvement *(Buchanan 1983: 14)*. Over the same period there had also been a considerable improvement in childhood mortality and such figures only served to make the almost static infant death rate all the more conspicuous.

Table 1.2: Five yearly figures of births and infant deaths, England & Wales 1871-1910

	Births	Infant Deaths	IMR
1871-75	4,132,227	634,616	153
1876-80	4,413,147	640,808	145
1881-85	4,454,531	619,444	139
1886-90	4,432,003	642,668	145
1891-95	4,536,387	684,121	151
1896-1900	4,615,972	721,711	156
1901-05	4,428,930	610,679	138
1906-10	4,264,768	497,269	117
1871-1910	35,277,965	5,051,316	143

Source: Registrar General's Quarterly returns

Table 1.2 shows that births reached a peak in the quinquennium 1896-1900 and gradually fell thereafter indicating a fall in the birth rate as the population was still rising. Infant deaths also peaked in the same decade, with the IMR reaching its highest levels for the quinquennia given in Table 1.2.

Table 1.3: Infant Mortality Rate by Father's Occupation, 1896-1921

	1896	*1899*	*1905*	*1911*	*1921*
Father's Occupation					
Professional	101.5	100.6	76.4	55.1	38.4
Farmers	97.3	97.1	80.2	74.2	51.2
Teachers	104.7	106.0	80.0	57.5	41.6
Clerical	124.3	119.1	95.9	51.2	42.0
Textile Workers	168.2	172.1	149.5	90.3	68.8
Miners	178.8	183.7	158.8	160.0	104.7
Farm Workers	115.5	116.9	101.4	95.9	67.6
Building Labourers	177.0	180.9	149.5	138.5	93.0

Source: Haines 1995: 313

Table 1.3 shows infant mortality rates according to father's occupation between 1896 and 1921. In all groups infant mortality declined steadily from the end of the nineteenth century. The table also shows that those occupational groups living in rural areas, such as farmers and farm workers, had the lowest IMRs within their socio-economic class at the end of the nineteenth century. However, the infants of miners who were also often to be found in rural and semi-rual areas, consistently suffered the worst IMRs, with hardly any significant improvement until after 1911. This was important for, as Lee points out, between 1871 and 1921 those employed in mining increased nationally from 547,000 to 1,412,000. He maintains that it is hardly surprising that such a large increase and its demographic consequences should have contributed to a retardation in the decline of the IMR, not just in the colliery communities themselves, but nationally *(Lee 1991: 20)*.

The South & West Yorkshire coalfields, which include Hemsworth district were typical of mining in the country as a whole in that they were to be found in rural and semi-rural areas. In many of the townships, e.g. South Kirkby, approximately 90 per cent of males were employed in coal extraction. This covered a wide spectrum of occupations, from the underground miners (who formed the majority) to colliery clerks, carpenters and mechanics as well as lampkeepers and horsekeepers. Moreover, the vast majority of the housing for miners in areas such as Hemsworth was new, although the pace of building often failed to keep up with the rapid increase in population. Thus it could be argued that miners' families enjoyed an environment which those living and working in towns and cities (e.g. textile and steel towns of the north of England and midlands) could only dream of. Furthermore, miners' wages were good, so that their wives did not usually work outside the home, thus making it possible for breastfeeding to continue for several months. The aim of this thesis is to explore such an environment. It will become clear that the relatively new housing and semi rural environment appeared to bring little to successful child rearing. Indeed, one asks, would the IMR among mining communities have been even worse had they all been in inner city areas?

Table 1.4 – Estimated IMR by father's social class, England and Wales 1895-97 and 1900

Social Class		1895-97 IMR	1900 IMR	Change % IMR
I	Professional	121	59	159
II	Intermediate	138	92	103
III	Skilled workers and clerical	147	97	106
IV	Intermediate	149	105	91
V	Skilled workers	166	127	72
VI	Textile workers	164	123	78
VII	Miners	169	132	68
VIII	Agricultural labourers	110	87	65

Source: Woods 1994: 84

Table 1.4 shows that, as an occupational class, miners had the highest IMR and the second lowest rate of improvement in the IMR. Only the IMR for agricultural labourers decreased by a smaller percentage and, in any case, they had had the lowest IMR in 1895-97 and therefore the least scope for improvement.

Table 1.5 shows a great variation in the infant morality rates in various European countries over the period 1870 and 1914. There was also a difference in the relative decline in the rates from one country to another. For example, the IMR in Ireland was the lowest in Europe in 1870 and hardly varied throughout the period. Norway and Sweden also had relatively low IMRs in 1870 (although not as low as Ireland) and had succeeded in reducing these from 104 to 66 and 130 to 72 respectively over the period 1870-1914. Russia, on the other hand, had a rate of 268 in 1870 and this figure scarcely changed over the whole period, remaining as high as 251 in 1914.

Table 1.5: European Infant Mortality Rates (Averages of 5 year periods) 1870-1914

Period	1870-4	1875-9	1880-4	1885-9	1890-4	1895-9	1900-4	1905-9	1910-14
England and Wales	154	145	142	143	149	158	143	121	111
Scotland	129	120	119	119	126	130	122	114	109
Ireland	95	97	99	95	100	105	101	94	92
Belgium	148	150	163	158	163	158	153	144	136
Denmark	132	141	139	135	138	134	121	112	98
France	185	164	170	163	170	162	144	131	119
Norway	104	105	99	96	98	97	82	72	66
Finland	163	165	163	147	148	134	135	120	112
Italy	224	208	201	194	187	171	169	157	139
Netherlands	210	199	191	175	166	154	141	119	104
Sweden	130	132	118	107	104	100	93	87	72
Switzerland	199	191	173	162	155	145	138	120	102
Austria	266	248	251	146	248	228	216	210	188
Germany	307	228	232	224	224	217	204	183	163
Russia	268	271	275	260	277	266	253	247	251

Source: Buchanan 1983: 14

It is clear therefore that a very small, but steady fall in the IMR in England and Wales began in the 1880s. However, this decline was temporarily halted in the 1890s largely, it is believed, as a result of the series of hot, dry summers during that decade which raised deaths from infant diarrhoea amongst infants. After 1904 a much more rapid decline began to take place. Scotland followed a similar pattern. Table 1.5 shows a similar decline in the IMR in most of the countries of Europe, with the exception of Russia. The decline is also much less marked in Belgium than other countries. However, the main difference between the IMR in the UK and the other European countries is that they did not have the increase in the rate in the 1890s.

While the pattern of decline of the IMR is clear there is less agreement about the cause of this decline.

1.2 Establishing a framework for understanding changes in infant mortality – the work of Arthur Newsholme and George Newman

During the 1890s and 1900s Sir Arthur Newsholme (1857-1943) was one of the most influential commentators on the problems surrounding infant mortality. He served as Medical Officer of Health (MoH) for Brighton from 1888 to 1908 and was then Medical Officer to the Local Government Board from 1909 until 1919. Newsholme's main emphasis in his reports *(Newsholme 1910: 39-49)* was on poverty and poor sanitation - obviously his experiences as MoH for Brighton led him to conclude that these were the most important single factors in causing high infant mortality. Sanitation was also one area that could be improved by the action of the local authorities. On the question of the employment of mothers outside the home, Newsholme was the only voice not to condemn it outright. Although he believed the ideal situation to be one where the mother remained at home to look after her young children and to suckle her infants, he also believed that the improvement in the family finances, and thus the diet of the children, resulting from the mother working may, in some cases, be preferable to the poor nutrition caused by extreme poverty. The factors which Newsholme regarded as having the greatest influence are summarised in Table 1.6.

Table 1.6: A summary of the factors influencing infant mortality proposed by Sir Arthur Newsholme.

A **Mother**	B **Care of Mother**	C **Care of Child**	D **Poverty**	E **Housing**	F **Sanitary Environment**	G **Personal Factors**
Age Work Family size Illegitimacy	Ante-natal Post-natal Maternal mortality	Delivery (midwifery) Visiting (care, advice Feeding Breast Artificial form preparation	Housing Unemploy-ment Wife's work Other children's work	Type Crowding	Pure water Excreta disposal Scavenging Paving	

Source: Woods 2000: 282

Newsholme maintained that the difference between the highest and lowest county IMRs represented the potential for a reduction in infant mortality in areas (*Newsholme 1910: 39-49).* However, at the turn of the twentieth century men such as Newsholme believed that infant mortality could not be reduced below around 80 deaths per 1000 live births because of irreducible deaths, i.e. they believed that the vast majority of deaths in the neo-natal and perinatal periods could not be prevented.

Apart from Newsholme, the other most important contemporary commentator on the problem of infant mortality was Sir George Newman (1870-1948). He was MoH for Finsbury from 1900 to 1907 and Medical Officer of the Board of Education and the Ministry of Health from 1919 to 1935. Newman differed from Newsholme in his approach and emphasis in a number of areas. Newman regarded 'motherhood' as the most important single factor affecting infant mortality. The term embraced both the physical condition of the mother, i.e. in order to give birth to a healthy infant and be able to breast feed it successfully, then she should be well nourished; and her educational level especially in regard to domestic hygiene and child rearing, which would help determine her ability to raise her offspring successfully. Newman praised the ideas of Dr James Niven (MoH for Manchester and lecturer in hygiene) who stated that all girls should be taught domestic hygiene during their two final years of education. This should include basic cooking, how to sew and mend and how to keep a house clean. It was also recommended that they learn basic child care, in particular correct procedures for feeding, bathing and clothing infants. Newman refers to the 1905 memorandum of the Board of Education giving advice for teachers. Although he believed much of the advice contained in this memorandum was admirable he stated that it offered little practical advice on infant management. Controversially, he goes on to state that compulsory education has deprived girls of the opportunity to learn such things from their mothers! However, as the IMR was no lower before the introduction of compulsory education in 1871 it would seem that girls did need to learn better methods of child care than those which had been handed down by generations. Furthermore, prior to the 1870s (and also coincidentally prior to compulsory education) infant deaths were regarded as "normal" and to be expected. Also the level of skills and hygiene which helped infants to survive in the rural environment were insufficient when these were transferred to the growing Victorian towns and cities. By the time Newman was writing his book in 1906 a number of leaflets on the subject of infant welfare, including feeding and hygiene, were being produced by local authorities in many different areas of the country as well as by the manufacturers of baby foods. The ability to read these was therefore just one of the benefits girls/young women could derive from receiving an education. Newman stated:

> Death in infancy is probably more due to ignorance and negligence than to almost any other cause as becomes evident when we remember that epidemic diarrhoea, convulsions, debility and atrophy, which are among the most common causes of death, are brought about in large measure owing to improper feeding or ill-timed weaning:... *(Newman 1906: 262)*

Newman went on to state that bronchitis and pneumonia are often caused by careless exposure to infection and the cold, whilst death from measles and whooping-cough were usually a result of poor nursing. Newman therefore recommended that, in addition to the instruction of mothers and the education of girls in domestic hygiene, lady health visitors should be appointed in all areas in order to instruct mothers on how best to care for their infants. *(Newman 1906: 262)*

Although there were differences in emphasis both in terms of causes and solutions, there was some overlap in the views of Newsholme and Newman. Neither of them, however, when presenting their various reports, recognised the fact that infant mortality had already peaked in 1898-9 and that by the time they were writing, the secular decline in England and Wales was already well under way.

Both Newsholme and Newman considered whether the decline in marital fertility had had any effect on the decline in infant mortality. Newsholme could find no statistical evidence to support this and therefore rejected it as a cause (*Buchanan 1983: 101).* Newman, on the other hand, was convinced that at one time there was a link between the two, but in the opposite direction *(Newman 1906: 32).* Indeed, between 1876 and 1899 the IMR either remained the same or, in the case of many urban areas, actually increased whilst fertility declined. However, if infant deaths from diarrhoea are discounted (because these were largely a result of hot dry summers) then the underlying long term trend of infant mortality continued downwards through these years so a link is possible (*Woods, 2000).* Longer birth intervals caused by reduced fertility would help in a number of ways. Firstly, the mother would have more time to recover physically from the birth of the previous child. Secondly, the longer intervals would allow her to devote more time and attention to each individual child, thus improving their chances of survival. Thirdly, with fewer children to feed the mother would be likely to be better nourished, which would help both in the antenatal development of the infant and also in the production of breast milk - the fact that the mother would also be less tired from looking after a number of young children would also help. Furthermore, breast feeding would also help to increase birth intervals, although only if carried on for several months.

The main areas for improvements advocated by Newsholme and Newman can thus be summarised as follows:

i) Better sanitation and hygiene both outside and within the home;

ii) Education of women and girls to achieve better 'motherhood' skills, with particular regard to infant feeding;

iii) Appointment of lady health visitors, particularly for the poorest areas;

iv) Other action by the local authorities to alleviate some of the problems arising from poverty, for example, better housing, water supply, scavenging.

1.3 Initiatives & Schemes To Reduce Infant Mortality

As concern about high and apparently stable infant mortality rates grew in the late nineteenth and early twentieth centuries, so various attempts were made to reduce them. This section examines some of these initiatives.

- **Breast Feeding, Fertility and Pure Milk**

Newsholme advocated breastfeeding - if the mother was able to do this - as this diminished greatly the problem of contamination of milk through poor sanitation and domestic hygiene. Hand or bottle fed babies were undoubtedly more liable to fall victim to summer diarrhoea (*Buchanan 1983: 104).* From data which he had from Brighton and other towns, Newsholme estimated that about 80 per cent of working class mothers did in fact breast feed their babies either totally or partially for at least two months. Reports from health visitors often contained an analysis of the method of feeding for all babies visited and these are, for the most part, in accordance with Newsholme's figures for Brighton *(Buchanan 1983: 105).* It was widely believed that the relatively high rates of breast feeding amongst the working class helped to keep the IMR lower in England and Wales than in most other European countries with the exception of those in Scandinavia, Scotalnd and Ireland (Table 1.4) However, with the exception of Russia, all European countries listed in Table 1.4, showed a steady decline in the IMR over the period. Evidence from other European countries, such as Austria and Bavaria, where dairy farming produced plentiful milk supplies so obviating the need to breast feed, suggests that IMRs were much higher in the rural areas than in the towns and that in some parts of these countries as many as one in three infants were dying before their first birthday.

Dwork has pointed out that, although ensuring the purity of the milk supply at source was essential, it was not sufficient in itself, as the absence of proper hygiene in its preparation within the home meant that the milk became contaminated at that stage, so exposing infants to impure milk (*Dwork 1987: 51-69).* P J Atkins confirms from his research that breastfeeding was widespread amongst the British working classes at this period (roughly 80 per cent). He maintains that this was much higher than in the rest of Europe. He uses figures from MoH

reports for Willesden and Croyden to show that there was much higher infant mortality amongst infants who were artificially fed than amongst those who were breast fed *(Atkins 2003: 1-11).*

It was because of the problems concerned with the quality of milk for artificial feeding that Newsholme emphasised the importance of breast feeding. However, Fildes points out that in London and other major English cities between 81 and 94 per cent of infants born to working class families were wholly or partially breast fed in the first month of life and that by three months 75 per cent were still being breast fed. In London 70 per cent of infants were still breast fed at six months and 50 per cent at nine months. Only amongst the middle classes was there any reluctance to breast feed. The fact that only a relatively small number of the well off did breast feed could partly explain why the gap in the IMR between social classes was smaller than that between different districts. In middle and upper class families breast feeding was not as prevalent, but infant death rates were generally lower. This highlights the importance of good domestic hygiene, particularly in the preparation and storage of milk for young babies. Middle and upper class families had homes which were generally better ventilated and less damp than those of the working classes. Furthermore they could afford to pay for the materials needed to keep the domestic environment clean. Poorer families struggled to provide themselves with sufficient to eat without having anything to spare to purchase such luxuries as cleaning materials. Thus in the conditions of the poorer districts it was not easy to apply the techniques necessary to maintain a high standard of personal hygiene. Some scholars, such as Beavor, *(1973: 244)* have suggested that maintaining a supply of pure milk for babies was the key to reducing the IMR. However, they have tended to overlook the fact that so many working class mothers did breast feed their babies and that there were not so many infants at risk from impure milk as their data suggests. However, these infants did become 'at risk' once they were weaned at somewhere between six and nine months of age. In 1901 regulations for the sale of milk were introduced which stipulated the percentage of fats and dry solids to be contained within milk. There were also regulations introduced regarding the pasteurisation of milk.

On the 2 September 1903 the Interdepartmental Committee on Physical Deterioration was set up in response to the discovery that many men who had volunteered to the Boer War were judged unfit to work *(Dwork 1991: 51).* In its discussion of infant mortality, the committee drew attention to the widespread need for a supply of clean milk for babies whose mothers were unable to breast feed them. Ideas on how to provide this were sought across

the Channel and attempts were made during the first decade of the twentieth century to improve the quality of milk supplied to the public and also to organise a pure milk source solely for infants. G F McLeary, who was one of the speakers at the 1906 London Conference on Infant Mortality, had worked as MoH in Fulham in the latter part of the nineteenth century and had a particular interest in infant feeding, particularly the provision of a pure milk supply for those mothers unable to breast-feed their infants. He was very interested in the work of the Frenchman Pierre Budin (1846-1907) who set up clinics (Consultations de Nourriture) in Nancy and Paris where babies could be weighed and where advice on feeding and encouragement could be offered to mothers.

Another Frenchman, a Dr Léon Dufour set up his first milk depot or "Gouttes de Lait" at Fécamp in 1894. These spread across France. Mothers could collect a supply of fresh milk in individual sterile bottles from these depots, the quantity depending on the size and age of the infant. It was important to encourage mothers to breast-feed wherever possible and the milk was therefore only available to those mothers who could not do so. The French methods proved very successful and were introduced into this country by the St Helens Corporation on the advice of its MoH, Dr F Drew Harris. The St Helens milk depot opened on 8 August 1899, but ultimately failed partly because most of those mothers who had the greatest need of this milk for their babies were those who were least likely to be able to afford it. Also, as in the St Helens scheme, the collection and return of bottles was inconvenient for many. Dwork says that even for those babies who survived an attack of diarrhoea, such an attack left behind a condition of general debility which made them more likely to die of other infections in later infancy or childhood *(Dwork 1991: 57).*

- **'The Huddersfield Scheme' and other Local Schemes**

Breast-feeding was also given much emphasis in what became known as the Huddersfield Scheme. The infant welfare initiatives there owed almost everything to the work of two men, Benjamin Broadbent, who was mayor of Huddersfield from 1904 to 1906, and Dr S G H Moore, MoH for Huddersfield from 1901 to 1930. Moore was greatly influenced by work in the French commune of Villiers-le-Duc, where it was claimed that no infant deaths occurred over the ten year period from 1893 to 1903. It was also claimed that this had been partly achieved by offering grants of two shillings a month to those mothers producing a child in good health at its first birthday. Concern about infant mortality in Huddersfield arose largely because of a decline in the birth rate there: it had fallen from 31.2 in 1880 to 22.8 by 1900 and the fact that the IMR was not declining in line with the general mortality rate. In 1902

there were 324 infant deaths in Huddersfield and it estimated that 23.5 per cent of these were due to preventable causes, while 20.1 per cent were not. The remaining 56.4 per cent were 'doubtfully preventable' being brought about by convulsions, bronchitis and pneumonia.

Most of Moore's proposals were in fact rejected by the council as being too expensive. However, in 1904 a scheme was introduced whereby the payment of one shilling was made to the parents of each child whose birth was reported to the MoH within 48 hours. Given this information, female health visitors could be appointed to visit homes where births had occurred in order to give advice on the rearing of infants (*Marland: 1993: 30).* These health visitors were also responsible for checking on the work of midwives. Alderman Benjamin Broadbent also promised a sovereign (£1) to the parents of children born in his own constituency of Longwood during his mayoralty. This was payable on the first birthday of the child. A promissory note in the form of a card was given at birth and this card had advice on the rearing of babies. Mothers were also sent cards at Christmas and Easter and at the onset of cold weather and the diarrhoea season; in each case the mother received a letter explaining what precautions to take. During the year, the IMR in Longwood fell from a mean of 122 over the previous decade to 53. In the first year of the scheme, out of 100 bottle fed babies, 50 died whilst out of 100 breast fed babies just seven died. It was therefore stressed that the golden rule was to 'FEED WITH THE MOTHER'S MILK'. However, it was pointed out that the vast majority of babies in Huddersfield were already breast fed (78 per cent breast fed, 19.5 per cent bottle and 2.5 per cent mixed). *(Minutes of Public Health Committee, Huddersfield Council Archives, 1905)* These figures match those of Newsholme and Buchanan.

Whilst the Huddersfield Scheme was not the first of its kind in the country, it was certainly one of the most influential. Similar to the Huddersfield scheme was an initiative in Glasgow which began in 1903 and was based on the early notification of births and health visiting. A milk depot was also established there. Infant consultation began there in 1906 with a woman medical officer. Four additional clinics opened in 1907. These were not restricted just to babies fed on depot milk and became very popular. In 1907 cookery courses were also established. Another scheme was the St Pancras scheme. However, no advice on hand feeding was offered there as it was felt that this encouraged mothers to wean when there was no need.

- **National Conference on Infant Mortality**

The first National Conference on Infant Mortality was organised by Benjamin Broadbent, the Mayor of Huddersfield and Councillor W Fleming Anderson, the Chairman of the Health Committee of Glasgow Corporation. It was dominated by Medical Officers of Health, an indication of the fact that they were in the vanguard of the fight against infant mortality. Even more striking, it would appear from the list of lectures that they were obsessed by what might be described as the micro management of infant health. Significantly, sanitation and pure water supply do not figure amongst these interests, indicating perhaps that it was felt that everything necessary in those fields had already been successfully accomplished. It was in these areas of sanitation, scavenging and water supply that MoHs had their greatest battles with the local sanitary authorities and councils during the 1880s and 1890s.

After a few opening remarks, Dr James Niven, MoH for Manchester (who believed that education of mothers in simple hygiene techniques would bring about a substantial fall in infant mortality) read out the list of the seventeen papers considered by the conference. They were as follows:

- *'The Teaching in Schools of Elementary Hygiene in Reference to the Rearing of Infants'* by Dr James Niven, MoH, Manchester.
- *'The Appointment of Qualified Women, with Special Reference to the Hygiene and Feeding of Infants'* by Dr J Spottiwoode Camerson, MoH, Leeds.
- *'The Public Supply of Pure or Specially Prepared Milk for the Feeding of Infants'* by Dr G F McCleary, MoH, Hampstead
- *'Premature Birth in Relation to Infant Mortality'* by Dr James Robert Kaye, MoH, West Riding of Yorkshire.
- *'Alcoholism in Relation to Infant Mortality'* by Professor G Sims Woodhead.
- *'Ante-Natal Causes of Infant Morality, including Parental Alcoholism'* by Dr J W Ballantyne, President of the Edinburgh Obstetrical Society.
- *'The Teaching of the Hygiene of the Expectant and Suckling Mother'* by Dr John F J Sykes, MoH, St Pancras.
- *'Earlier Notification or Registration of Births'* by Alderman Benjamin Broadbent, Mayor of Huddersfield.
- *'Memorandum on the Earlier Registration or Notification of Births'* by Dr E W Hope, MoH, Liverpool.
- *'Infant Life Insurance'* by Councillor W Fleming Anderson, Chairman of the Health Committee, Glasgow.
- *'Infant Mortality and Life Insurance.'* By Mr Frederick Schooling, Actuary of the Prudential Assurance Company.
- *'Infant Mortality and the Employment of Married Women in Factory Labour before and after Confinement.'* By Dr G Reid, MoH, Staffordshire.
- *'The Regulation of the Placing of Infants out to Nurse.'* By Dr S G H Moore, MoH, Huddersfield.
- *'The Amendment of the Infant Life Protection Act.'* By Dr Alfred Greenwood, MoH, Blackburn.
- *'The Chemistry of Infant Foods'* by Mr James Knight, D.Sc.

- *'Increase of the Powers of Local Authorities with Regard to the Milk Supply.'* By Dr A K Chalmers, MoH, Glasgow.
- *'The Operation of the Midwives Act in England, with a View to its Extension to Scotland and Ireland, in Relation to Infant Mortality.'* By Dr Merry Smith.

Dr Niven expressed the view at the conference that what was needed for the prevention of infant mortality was the spreading of knowledge of the proper methods of the feeding and general management of infants. He informed the delegates that in Manchester a trained nurse gave a course of six lectures with practical demonstrations to older girls in elementary schools; two on washing and dressing, two on infant feeding and two on the general management of babies. The importance of good ante-natal care for pregnant women was also discussed, particularly in relation to diet, exercise etc. Also recommendations for improvements, as well as the need for more medical supervision were considered.

- **Public Health Initiatives**

The 1872 Public Health Act established a network of hundreds of local sanitary authorities which were obliged to ensure a pure water supply as one of their statutory duties. However, the steps needed to improve the urban environment often clashed with the pecuniary interest of factory owners, landlords and shopkeepers who often dominated the local sanitary authorities. As a result progress was slow. Thus by 1879 only 415 urban local authorities were in charge of their own water supplies. By 1905, however, two thirds of the 1,138 urban sanitary authorities were in this position. *(Szreter 1998: 94)* Furthermore, the various Acts introduced to control the supply and quality of food frequently led to battles between health officials and penny pinching councillors who represented the majority of ratepayers. 'Laissez-faire' remained the prevailing ideology in Victorian Britain during the period in which public health initiatives first came to the fore. There were, however, some people in public office in the urban areas who did believe that it was their civic duty to help all those in their town, not just the middle class from amongst whose ranks they themselves came. The most prominent example of these was the Congregationalist, Joseph Chamberlain, who was mayor of Birmingham from 1873-75. He was the foremost of those non-conformists who preached what became known as 'the Civic Gospel' from the 1860s onwards. They inspired big business men to become involved in local government as opposed to the 'shopocracy' or small bourgeoisie who were concerned to minimise the local rates by restricting expenditure. Until this time no-one with any particularly ambitious ideas for local government wanted to become a councillor. This growth of municipal concern was very relevant to the health of the working classes and thus had a bearing on infant mortality. For example, it was during this

period that many of the Victorian cities began to provide a reliable source of clean drinking water through a massive investment in reservoirs and the necessary pipelines to bring the water into the cities. Although some of this investment was driven by the needs of manufacturing industry for water the effect on public health was still the same. The local authorities also began to provide public baths and public libraries which put personal hygiene and reading within the reach of many for the first time.

A report of 1877 gave the first analysis of infant mortality in Birmingham, and the first MoH for the city, Alfred Hill, concluded that its principal cause was improper feeding and careless nursing, i.e. he blamed the high IMR (164 for that year in Birmingham) on poor motherhood skills and argued that little could be done to reduce the rate. Thus, he appeared to be absolving himself from any responsibility to do anything about it *(Galley 2004: 30-31)*. If Birmingham was supposed to be at the forefront of providing its residents with better care and facilities, there would appear to be little hope for other cities! The Notification of Births Act was passed in 1907, which required notification of births within 48 hours (however, it was up to the individual local authorities to decide when to adopt it). From 1st April 1910, under the Midwives Act of 1902 it became an offence for a woman without a medical qualification to attend women in childbirth. The National Insurance Act of 1911 provided a maternity benefit which took the form of a cash payment on the confinement on an insured women or the wife of an insured man. The sum payable was 30 shillings. If the wife of an insured man was herself an employed contributor she received an additional sum of 40 shillings.

This broad outline of the efforts made to reduce infant mortality shows how diverse opinions were on this subject. For example, we have those such as Broadbent and McLeary who firmly believed that breastfeeding and advice to mothers through clinics and health visits were the best way forward. However, many of the large Victorian city councils felt that improved housing and sanitation provided the best hope of tackling the problem. Although Hemsworth was not a city, it is this latter approach with an emphasis on the environment, which, as we shall see, was the more relevant.

1.4 Literature on the subject of infant mortality

- **Poverty, Sanitation and Urban Conditions**

As we have seen in section 1.2 of this chapter Newsholme and Newman were the chief contemporary commentators on infant mortality. Newman was in broad agreement with Newsholme regarding the conditions in the Victorian and Edwardian urban environment.

> There is a relation existing between conditions arising out of urban life which are unfavourable to the life of infancy *(Newman 1906: 38).*

Newman emphasised the need for greater cleanliness in the towns and cities. In his chapter on *The Environment* he quotes a report on the Health of Sheffield which stated three main areas for improving the urban environment:

i) the abolition of privy-middens and the provision of water closets and frequently emptied dustbins;
ii) the reconstruction of defective drains and sewers;
iii) the better paving of streets and yards. (*Dr Scurfield 1904: 17)*

Newman also drew attention to the fact that urban IMRs were mostly higher than rural rates in the third quarter of the year, highlighting the effect of hot, dry late summer months on the spread of infant diarrhoea within the densely populated urban environment. Counties with the densest populations had the highest IMRs (*Newman 1906: 28*).

Poverty in itself is not necessarily an indicator of levels of infant mortality, but according to figures produced by Haines, using data from the 1911 Census, occupation of father is a much more reliable indicator. Agricultural labourers were notoriously poorly paid but their IMRs were low; only bettered by the professional classes. Miners, on the other hand, were usually relatively well paid but had the highest IMRs. Furthermore, the results of Haines' analyses lend support to the opinion that decline in childhood mortality was related to occupation and socio-economic status, the decline being generally more rapid for the higher occupational classes and social groups than for those in the less well-off groups (*Haines 1995: 308-309).*

Szreter asserts that the IMR only began to improve when social services led to an improvement in the environment surrounding the infant, i.e. the working class home conditions. However, with regard to older children and adults the fall in the death rate reflected improvements in the urban environment outside the home (*Szreter 1988: 32).* Szreter argues that it is the behaviour of the classic sanitation and hygiene diseases which

predominated in the change of mortality patterns in nineteenth century England and Wales *(Szreter 1988: 18).* Thus the unplanned proliferation of overcrowded towns and cities prevented the IMR from falling until the sanitary problems began to be solved towards the end of the century and with them the fall in water-borne diseases. Szreter refutes McKeown's theory that increased nutrition per capita was responsible for the decrease in general mortality *(Szreter 1988: 5).*

There was also a substantial difference in IMRs in rural as against urban areas; this is well documented by Woods and Watterson. In many rural districts, such as Ampthill, a rural parish in Bedfordshire, the IMR fell steadily from the 1860s onward. This is undoubtedly partly due to the fact that there was not the degree of overcrowding in rural areas compared to the towns. Williams and Galley suggest, however, that the difference between urban and rural communities is more complex than that given in traditional accounts. Many rural areas, for instance, showed no rise of the IMR in the third quarter as against other quarters. Indeed, in some cases the rate for the third quarter was lower than the other quarters. As will be shown in later chapters, this urban-rural difference was highlighted in Hemsworth district where some townships grew rapidly into quite densely populated mining towns, while only a few miles away the traditional agricultural way of life continued virtually unchanged. The IMR did not rise in these agricultural communities but increased sharply in the new urban communities.

- **Public Health Initiatives and the decline of infant mortality**

Chris Galley's work on social intervention and the decline of infant mortality in Birmingham and Sheffield, 1870-1910 highlights the problems encountered by MoHs in their efforts to reduce the IMR. Earlier in this chapter it was mentioned that Birmingham was the centre for the growth of the "Civic Gospel" whereby the middle class civic leaders accepted responsibility to improve conditions for the poorer members of society and not just for the members of their own social class.

Alfred Hill was appointed as the first MoH in Birmingham in 1872 and remained in that post until September 1903. The first detailed analysis of infant mortality was included in his report of 1877. In this report he appears to have identified the principal causes of infant mortality and, although he seemed pessimistic about the chances of reducing the IMR he does seem to have suggested the action necessary to bring about a decline. He advocated the appointment of lady health visitors:

> It appears to me that an organised society of ladies to visit low-class homes and instruct women in a simple manner on the best mode of feeding and nursing children would be of immense service, ... *(Hill, quoted in Galley 2004: 31)*

However, even in an enlightened city such as Birmingham it was not until 1899 when such recommendations were finally put into action and four female health visitors were appointed. *(Galley 2004: 33).*

According to Galley, there was a similar pattern of inaction in Sheffield until the appointment of John Robertson to the post of MoH in 1897. He appointed two female inspectors in 1898 and from 1899 more serious measures were taken to address the high IMR. A further four female inspectors were appointed in 1900 and their duties gradually increased to include giving advice on feeding, nursing care and cleanliness. Galley states that in both Birmingham and Sheffield it is difficult to assess the impact of the health visitors *(Galley 2004: 39).*

Galley's paper thus highlights the relative inaction on the part of two of our major cities until the late 1890s, despite the fact that infant mortality rates had been calculated and made public for some time. However, it appears that MoHs were too quick at that time to put the responsibility for the high IMRs onto mothers, so absolving themselves of the responsibility of attempting to reduce them, until the factors discussed above caused alarm as to the future of the country and its empire.

- **Seasonal factors and infant diarrhoea**

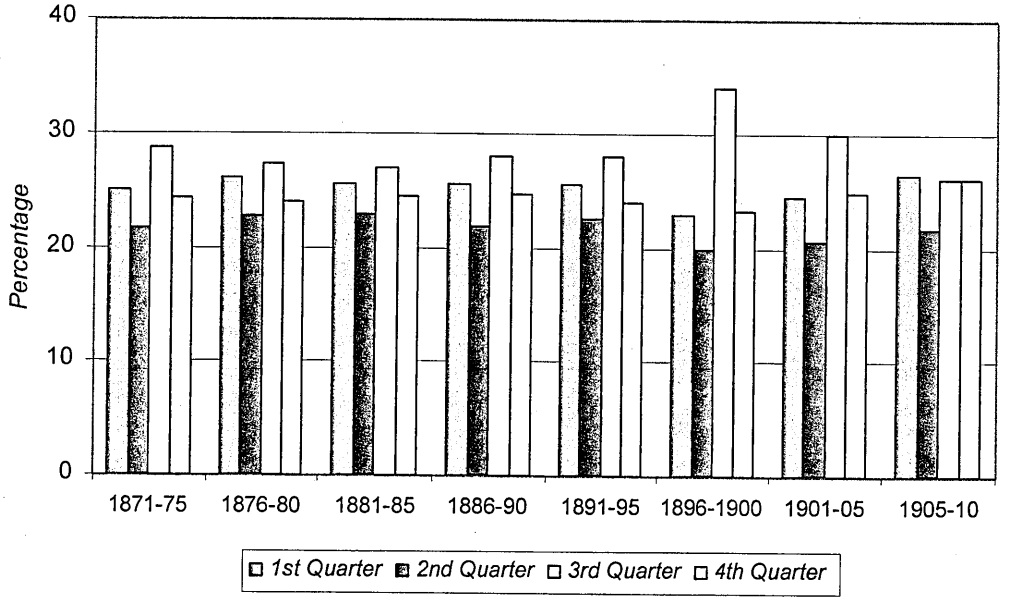
Infant diarrhoea was largely seasonal, occurring during the warmer months and particularly during years with hot, dry summers. This was closely linked with the level of sanitation and the general environment, both within the home and in the immediate surroundings.

Tatham's work for the Interdepartmental Committee of Physical Deterioration suggests that infant diarrhoea was the principal reason for the maintenance of high levels of infant mortality in the most urbanised counties of England and Wales between 1873-7 and 1898-1902.

Figure 1.2 shows the percentages of infant deaths occurring each quarter (i.e. Jan-Mar, April-June, July-Sept, Oct-Dec). The April to June quarter always had lowest percentage of infant deaths throughout the whole period. The January to March and October to December quarters remained generally constant throughout the period with roughly 25 per cent of all infant deaths occurring during these periods, many being due to bronchitis, pneumonia and

other chest infections. Those infants born prematurely were particularly at risk during the cold winter months.

Figure 1.2: Percentages of infant deaths occurring in each quarter of the year 1871-1910



Source: Derived from the Registrar General's Quarterly Returns of Births & Infant Deaths, 1871-1910

Apart from 1905-1910 the third quarter (July to September) always had the highest number of infant deaths, although this was particularly marked in the period 1895 to 1905, clearly showing the effect of the meteorological conditions prevailing at that time, (i.e. a series of hot, dry summers). Significantly, however, in the period 1905 to 1910 when the IMR was beginning to fall dramatically, the third quarter no longer showed the highest percentage of infant deaths and this is indicative of the part which diarrhoea had played in keeping the IMR so high for so long. Once the problems surrounding sanitation, refuse collection, water supply as well as domestic and personal hygiene began to be solved, summer diarrhoea, although it still remained of great concern, ceased to have quite the same effect on the IMR as it had done for the previous 20 or so years. Thus the IMR itself began its secular decline as a result.

Summer diarrhoea was closely related to environmental conditions, i.e. the availability of pure drinking water, efficient methods of sewage and refuse disposal, general housing conditions. Overcrowding is a particularly important factor in the spread of diseases such as summer diarrhoea, both with regard to the number of occupants in individual houses and also the

proximity of houses and thus population density. This is particularly significant when comparing levels of infant mortality in urban and rural communities,

> Infant mortality is always highest in crowded centres of population, but a high infant mortality can be avoided under conditions of dense aggregate of population *(Newshome, quoted in Woods et al 1989: 115).*

Woods *et al* point out that the increase in the IMR in the 1880s and 1890s was greatest in densely populated urban areas, especially in years with hot, dry summers.

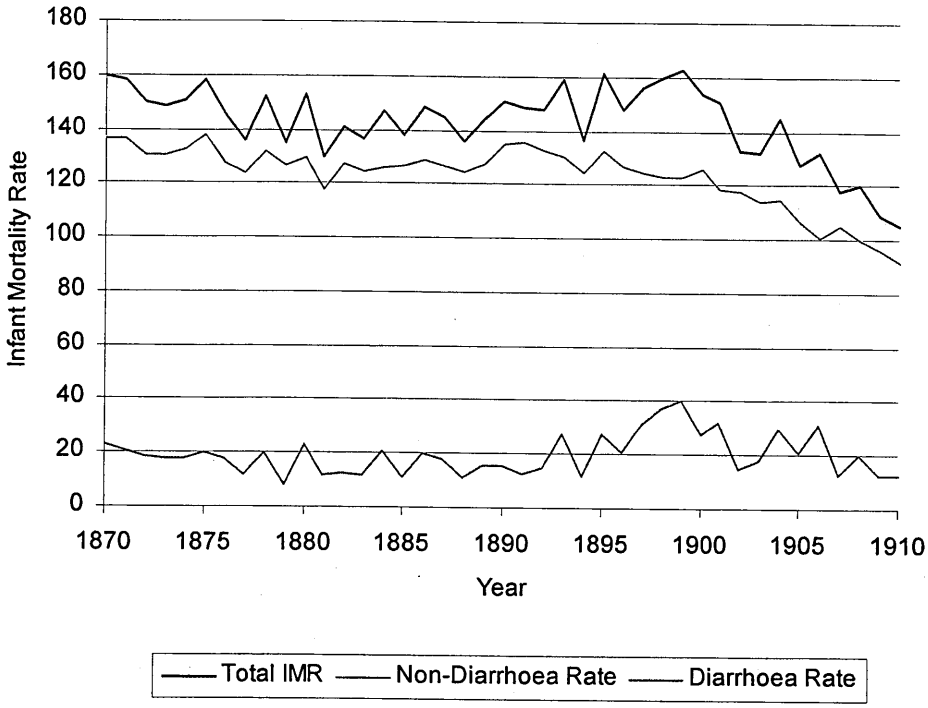
> Climatic conditions in the third quarter interacted with the poor urban environment, resulting in high levels of diarrhoea and dysentery, particularly in infants from 1 to 11 months *(Woods et al, Part II 1989: 121).*

There was also a particularly hot and dry summer in 1911, a year which also showed a steep rise in the IMR throughout Europe, although by this time IMRs were generally falling.

According to figures produced by Woods, the underlying trend in infant mortality continued steadily downwards in the later decades of the nineteenth century 'Once the effects of diarrhoeal diseases are discounted, infant mortality appears to have declined continuously from 1891 or the late 1880s' *(Woods et al 1989:129).* During the 1880s and 1890s there were a number of hot, dry summers which gave rise to an increase in the infant deaths from diarrhoea and this caused a rise in the overall IMR at that period. If the diarrhoea deaths were subtracted from the total of infant deaths then the IMR trend can be seen to be steadily downwards. This was, in fact, the case in most rural areas where population densities were much lower and where there was much less overcrowding. Thus the problems of poor sanitation combined with hot, dry weather conditions did not give rise to diarrhoea epidemics such as those in urban areas. Hence generally the IMR fell continuously from the 1860s in many rural areas.

Naomi Williams believes that the seasonal effect worked in two ways. Firstly, she states that it picked out particular areas within the urban environment causing a large number of infant deaths regardless of socio-economic class. Secondly, it selected infants of particular socio-economic groups regardless of where they lived. Both these components were significant and exercised a contribution independently of each other. At the micro level there were big differences in housing and sanitary conditions from one street to another. For example, in one street there may have been one privy for every seven people, but in the next only one to every fifteen or more people *(Williams 1992: 89-93).*

Figure 1.3: Total Infant Mortality, Infant Mortality due to diarrhoea and Infant Mortality excluding diarrhoea deaths, England & Wales 1870-1910.



Source: Galley 2005, Registrar General's Quarterly Returns 1870-1910

The subject of Dr Newsholme's 1899 presidential address to the society of Medical Officers of Health was epidemic diarrhoea. His main conclusions were that:

a) Epidemic diarrhoea is chiefly a disease of urban life;
b) Epidemic diarrhoea as a fatal disease is a disease of the artisan, but even more of the lower labouring classes to a large extent;
c) Towns which had adopted a water-carriage system of sewerage had, generally, much less diarrhoea than those which retained other methods for the removal of excrement;
d) Towns with the best scavenging arrangements had the least epidemic diarrhoea.

In conclusion, diarrhoea was a 'filth disease' with the chief source of contamination in the home. Largely as a result of this there was a growth in the promotion of 'municipal cleanliness', with, for example, more regular refuse collection. Also the water closet system gradually displaced the various types of privies.

The increase in the IMR in the 1890s was greatest in the densely populated urban areas. Thus the level of urbanisation may have been responsible for increased rates during the

1890s and thus delayed the decline in the IMR which had begun in a number of other European countries (albeit usually from a higher starting point).

Nigel Morgan *(Morgan 2002)* asserts that much of the increase in the IMR in urban areas in the 1890s was due to an increase in the number of horses (and hence in the accumulations of manure which would attract flies). His detailed study of Preston examines the growing number of stables in the town which went hand in hand with the growth of industry and prosperity there. This was accompanied by a rise in the population. Morgan states that the design of the houses and layout of the streets in Preston contributed to the town having a higher incidence of summer diarrhoea than in towns of a similar size such as Huddersfield and Halifax *(Morgan 2002: 104)*. Much of the increase in the number of horses was a result of tradesmen such as builders, bakers and fish merchants keeping horses and carts in order to carry out their business and make deliveries. Many of the stables were situated in the midst of general housing in heavily populated areas. As this would lead to significant heaps of horse manure, and hence attract flies which could then contaminate any uncovered food, in these populated areas, Morgan believes this would have been a significant factor in the high IMR in Preston (although he does acknowledge that flies had been known to have a range of up to 20 km *[Morgan 2002: 122]*). The realisation of the part played by flies in the spread of epidemic diarrhoea was not, of course, new, but was the subject of a paper presented by Dr James Niven, MoH for Manchester, in 1910 and confirmed by Buchanan's study of coal-mining communities *(Morgan 2002: 100).*

Respiratory disease is usually related to climate, and Newman believed that respiratory mortality is also related to urban life. He noted that urban respiratory mortality rates were as much as 80 per cent in excess of rural rates and believed that this was due to atmospheric pollution *(Newman 1906: 49).* Mortality rates from measles and whooping cough were also greatest during the earliest part of each calendar year. In England and Wales measles mortality peaked during the last month of infant life. Medical opinion of the time was keen on isolation to avoid the spread of infection, but this was very difficult in many urban areas, especially colliery communities. The constant habit of attending chapel despite advice given to the contrary brought criticism from health professionals during epidemics as it was felt that this caused outbreaks of infection to last longer than they might otherwise have done.

- **Motherhood, Female Employment and the Education of Women**

Both Newsholme and Newman believed that motherhood and the education of women in good child-care practice were vital components in the battle against infant mortality.

Some contemporary MoHs were critical of the diet of some working class women and not solely on grounds of poverty. Dr Erskine Stuart, MoH of Batley in West Yorkshire in the 1900s, asserted that the diet of many working class women there consisted largely of 'fried fish, tea and slops' *(Dr Erskine Stuart, West Riding MoH report 1902: 40).* Moreover, as Archer points out in his study of infant mortality in Batley, the health visitor there (in the 1900s) felt it necessary to organise cookery classes on 'how to cook nourishing dinners in the home at the smallest cost *(Archer 1987: 81).*

There were many like Erskine Stuart who put the blame for high infant mortality onto mothers. This was particularly true of the years after the turn of the century when the physical health of the nation became a matter of general concern. It was also particularly the case in areas which had a very high IMR such as Batley, where Dr Erskine Stuart, and his predecessor Dr Swann, blamed parents for producing children without the necessary means of support, and (in the case of Dr Erskine Stuart) mothers going out to work, leaving their babies at risk of being given opiates to keep them quiet. Brockington *(1966: 41)* asserted that girls as young as seven years were left, whilst their mothers were at work, to feed their infant siblings on bread soaked in sweetened water which would naturally lead to a weakened state of health and a lower resistance to infection.

In his annual report of 1902, the MoH to the West Riding County Council (WRCC) states that:

> It is significant that in those districts producing the most children there usually exists the greatest ignorance or carelessness as to the rearing of infants, so that the juvenile death rate is often abnormally high' *(WRCC Annual Report for 1902: 6)*

In his 1905 annual report to the WRCC the author noted that on a frosty night in November at 11.30pm, he had passed twelve women carrying young babies, many inadequately wrapped against the cold, within a distance of less than a quarter of a mile.

Woods *et al* point out that improvements in the education of women during the latter half of nineteenth century would have had an influence on both the decline of infant mortality and

marital fertility. However, there is little firm evidence that the ability to read had much influence within the domestic sphere. For example, although by the late 1930s many miners' wives were better educated and, as a result, aware of methods of contraception, but tended to meet a high degree of resistance from their husbands as regards their use. Dennis, Henriques and Slaughter cite the example of one young woman who purchased condoms only for her husband to throw them on the fire, saying that they 'spoilt his pleasure'. By the age of 30 this young wife had managed to limit her family to two children only by the expedient of repeated abortions, often self-induced and was said to look old for her age. *(Dennis, Henriques & Slaughter 1956: 188)* Although this does not necessarily mean that she had learnt how to care for her children better, she would appear to realise that limiting family size would mean that her children had a better chance of survival. On the other hand, many miners wanted little to do with their children and, as they were well paid, they were in the position where they could spend much of their free time outside the home, in the club or public house.

Two doctors, who were contemporaries of Newsholme and Newman, were Helen Blagg and Hugh Ashby and they both concluded that high IMRs and education of women were inextricably linked. Ashby stated that lack of proper knowledge on the part on the mother in the management of the infant was one of the main causes of infant mortality *(Ashby 1922: 34-46).* He goes on to say that infant mortality is highest in those districts where women are unable to read or write. However, Blagg expressed the opinion that it was useless to teach women to read and write if they could not perform the ordinary duties of a housewife and mother. She stated that: 'there is no panacea against infant mortality, only the common sense rules as to the need for fresh air, cleanliness, sunlight and proper food *(Blagg 1910: 10).* Blagg's criticism of working class mothers do not seem to take into account the sanitary conditions in which they lived. Indeed she stated that 'infant mortality does not depend in more than a general way on the actual sanitary conditions' *(Blagg 1910: 8).* Instead she once again blames working class families themselves for not cleaning their homes and for causing overcrowding by their high birth rate. She concluded that MoHs are fighting against the 'terrible ignorance and obstinacy which prevails amongst many of the working classes' *(Blagg 1910: 8).* However, she does not seem to offer any solutions to this problem. These views would appear to be typical of those which were prevalent throughout the industrialised world at the time. Catherine Rollet points out that it is possible to discern a similar pattern in the attitude towards infant mortality in all the industrialised countries. She says that, while the 1880s and 1890s saw an emphasis on breast-feeding, nutrition and the provision of clean

milk, the turn of the century saw increased attention on the role of mothers. There was thus a trend in Britain in the period leading up to the First World War towards concentrating on mothering rather than taking measures to improve the milk supply which had had no apparent effect in the past *(Rollet 1997: 47).*

Galley's work on infant mortality in Sheffield and Birmingham also points to the fact that MoHs were far too ready to blame parents (and mothers in particular) for the high IMR in their cities. John Robertson, when MoH for Sheffield, made the following statement regarding the high mortality amongst young children, 'I believe that to a very large extent this high Mortality is due to ignorance and carelessness on the part of parents and guardians' (*Galley 2004: 38).* Alfred Hill was MoH in Birmingham from 1872 until 1903 and he too suggested that maternal neglect was the main cause of high IMRs *(Galley 2004: 32).*

In 1939, some 20 years after Blagg was writing, Leslie Housden, a doctor who specialised in infant welfare published a book designed to teach mother-craft to older girls. This was published in London under the auspices of the National Association for maternity and child welfare centres and for the prevention of infant mortality, showing that mothering skills were still regarded as an important tool in the battle against infant mortality.

Closely linked to the role of motherhood is that of employment of women. Again, there was much debate about this in all industrialised countries. One study of working mothers in France suggests that there it is evident that infant mortality was higher when the mother worked. In those parts of northern France where textile production was predominant (and in which women were employed) the IMR was between 200 and 250 at the end of the nineteenth century, whereas in the nearby districts noted for mining and metallurgical production, it never rose to more than 130 *(Bideau, Desjardins, Brignoli 1997: 22-37).*

David Graham also states that from the middle of the nineteenth century female employment was believed to have been a direct cause of infant mortality. For example, he quotes the MoH for Preston who said in 1902 that the employment of female labour in the mills was the first among the direct causes of infant mortality there *(Graham 1994: 313-346).* However, he explains that the type of work a woman was engaged in was an important factor. For example, textile workers often damaged the foetus in utero by reaching over their looms while late into pregnancy. They were obliged to work late into pregnancy as the family relied

on their wages. He concludes by stating 'it is clear that female employment – married or otherwise – was not the major cause of infant mortality' *(Graham 1994: 339).*

Garrett, Reid, Schürer and Szreter *(2001: 128-130)* also came to the conclusion that paid employment for women was usually associated with high infant mortality, particularly for those employed in the textile and potting industries. From their analysis it is clear that that the infants of women who were working at the time of the 1911 census faced a risk of death of approximately one and a half times higher than average in both England & Wales and the USA.

One contemporary commentator, Ashby, did not condemn female employment outright as he believed that women only go went out to work in those districts, 'where the husband's wage is low, or the work irregular or if she is widowed'. *(Ashby 1922: 58).*

Thus we see that although contemporary experts appear to have been too ready to assign the cause of a high IMR to poor mothering skills, work done more recently by Graham and Garrett, Reid, Schürer and Szreter does seem to support their opinions that the employment of women had a detrimental effect on the IMR.

- **Other Factors Influencing Infant Mortality**

Irvine Loudon discusses the effects of maternal mortality and malnutrition on infant mortality and cites Robert Morse, an American statistician, to the effect that in America in the 1920s the IMR for infants whose mothers died within one year of birth was 450. As far as those infants whose mother died within six months of their birth, six in every ten did not survive to their first birthday. *(Loudon 1991: 30)*

The 2nd World War highlighted the far reaching consequences of malnutrition as far as infant mortality is concerned and the effects differed according to whether the country was occupied or not. In the occupied counties the IMR rose during the particularly bad winter of 1945. There was extreme cold, accompanied by a lack of fuel and a fall in food supplies. There was a marked drop in birth weights and a high perinatal mortality rate for infants of mothers who suffered in the famine of 1945. The figure for perinatal mortality in the Netherlands was 57 per 1000 live births, but this fell to 33 per 1000 in 1946 once the famine had ended. However, those mothers who were exposed to the famine during the first six months of their own intra-uterine life had first born infants with lower birth weight and more intrauterine

growth retardation. These infants were frequently born prematurely. Thus it can be seen that malnutrition experienced by pregnant women can adversely affect the outcome of pregnancies in the next generation. *(Loudon 1991: 43-44).* Although these figures relate directly to the Netherlands it is logical to suppose that the inadequate diet of many of the poorer classes in Victorian Britain (and earlier) must have had a similar effect on unborn infants.

Another question close to the heart of many in the medical profession who were concerned with infant mortality was that of alcoholism. They had a number of concerns. Firstly, it was believed that the alcohol in the mother's breast milk could stupefy the infant. Secondly, overlying usually occurred on a Saturday night when the parents had been out drinking; both parents and child (who presumably got this alcohol via the mother's milk) were likely to sleep more deeply due to the effects of alcohol *(Buchanan 1983: 103-106).*

A number of practitioners and MoHs felt that a not inconsiderable number of infant deaths were due to infanticide. However, courts usually appeared to be sympathetic towards the plight of the unmarried mothers who appeared before them on such charges. Many general practitioners attributed most such suspicious infant deaths (where the infant had usually died due to suffocation) to accidental causes *(British Medical Journal 4 July 1881: 908).* Those mothers who were brought to court were usually found guilty of 'concealment of murder', *British Medical Journal 20 July 1890: 189)* whilst a few were found to be 'temporarily insane'. (*British Medical Journal 23 July 1904: 214)* On the balance of probability it seems that most cases of suspicious infant deaths were more likely to involve neglect rather than intentional violence. Such instances include cases of starvation and overlying as well as infant poisoning due to opiates. These were given to comfort the child and to combat diarrhoea. 'Godfrey's cordial' was often the culprit.

A further factor affecting the IMR and the way in which it varied from one part of the country was the percentage of illegitimate births. For example, generally the illegitimacy rate was lower in mining communities than the national average. Newman and Newsholme both found that the IMR for illegitimate births was double that for legitimate. Although this is true generally it is not always the case, for example, in parts of rural Scotland the illegitimate birth rate was much higher than the national average, but because of good family support the IMR for these births remained the same as for the legitimate births within the same community.

- **Buchanan- Infant Mortality in Mining Communities**

In his D.Phil thesis on infant mortality in four areas where coal mining was predominant, Buchanan discussed various possible causes of infant mortality at some length, some of which, such as syphilis, overlying and suffocation, do not appear to have had much influence *(Buchanan 1983: 132).* However, the main thrust of his argument is that the high infant mortality rate in mining communities was largely as a result of environmental issues, particularly poor sanitation.

Buchanan emphasises the close connection between meteorological conditions and the number of infant deaths due to diarrhoea. The pupa of the common house-fly incubates in the sub-soil and he produces figures to show the temperature of the sub-soil throughout the 1880s and 1890s. Infant deaths were never high in June in those years when the flies had not yet hatched due to the lower temperature of the sub-soil as flies were one of the chief ways in which diarrhoea was spread.

Hence:

> The protection of milk was particularly important, for milk provides an excellent medium for the growth of micro-organisms and was largely responsible for the high level of infant mortality which continued until 1900 *(McKeown 1975: 422).*

Buchanan's thesis will be examined in more detail in Chapter 5 with particular reference to the experience of the coal mining community in Hemsworth District.

Further to his thesis, Buchanan's paper on Infant Feeding, Sanitation and Diarrhoea in Colliery Communities, 1880-1911 *(Buchanan 1985)* presents more evidence of the role played by flies in the spread of epidemic diarrhoea and hence the contribution to the high IMR in colliery communities.

Buchanan also discussed other less common causes of death in infants such as infanticide. He believes that it was relatively infrequent. However, one contemporary practitioner took the opposite view and felt that it was much higher than reported. Dr Parker, the MoH for Houghton Rural District in Lancashire, in his annual report for 1880 (06.01.1881) blamed the excessive IMR on Friendly Society cover, insurance and the gift of coffins by the coal company. He felt it likely that parents would thus be tempted into committing infanticide particularly as he was unable to identify any sanitary problems in the district. Buchanan

stresses that, although there were those at the time who agreed with Dr Parker, it was still a minority opinion. *(Buchanan: 202)*

However, Buchanan does appear to be stating his belief that death at the hands of parents did sometimes occur, albeit not deliberately. He states that Godfrey's cordial, a common opiate for children to comfort and combat diarrhoea infections, was sometimes given in excess thus possibly causing (or hastening) death. Also miners had a reputation for heavy drinking and he feels this may have been a contributory factor in deaths by overlying, although he does not give any figures or evidence for such deaths. He also states that alcoholism could be a factor if infants were affected whilst in the womb. However, in coal mining communities, the women did not usually drink and therefore this would not have been a significant factor in producing the high infant mortality rates in the infants of coal miners. *(Dennis, Henriques & Slaughter 1969: 88, 154-6)*

Similarly, as miners tended to marry young they tended to have a low infant mortality rate due to syphilis. In fact, only the infants of professionals had a lower syphilis related IMR, *(Buchanan 1983: 109)* although the Royal Commission on Poor Laws (1905-09) concluded that syphilis was an important factor in infant mortality. *(Brockington 1966: 27)*

- **Cultural Influences on Infant Mortality**

It is argued in a later chapter that some of the high level of IMR amongst colliers' families may have been down to certain cultural influences and practices.

Patricia Thornton and Sherry Olson made a study of infant mortality in Montreal for the years 1860-1900, expecting to find that social class was the biggest factor in determining infant mortality. They divided the families into three groups: those of French origin, Irish Catholics and Protestants mainly of British origin. They found that infants born to the French families had the highest IMRs, while there was little difference between those of the Irish Catholics and the Anglo-Protestants. They state that they cannot account for the differing survival rates by biological differences associated with mother's age, twin births, nor by rents and occupational status, thus drawing the conclusion that the differences were cultural in origin. When making a biometric analysis of infant deaths for 1900, there were much steeper slopes after 3 months of age for the French, but only after 7 or 8 months for the Irish Catholics and Anglo-Protestants indicating probable differences in weaning age and feeding practices.

(Thornton & Olsen 2001, 95-109). This reinforced ideas that cultural influences may have been significant amongst mining communities.

- **Fertility**

Szreter and Hardy state that there was a pronounced secular decline in marital fertility in all sections of British society during the 1890s and 1900s. However, they also state that it remained relatively high in the areas involved in iron and steel, metalworking, heavy engineering or shipbuilding, and coal mining. Furthermore in 1911 there appears to have been a tremendous variation the fertility behaviour of different towns (*Szreter & Hardy 2000: 65).* They also state that Barnsley, the coal mining centre of West Yorkshire, was the only urban centre east of the Pennines with very high fertility in 1911. (Hemsworth was still classed as a rural district at this time). They go on to state that the towns with high fertility were those in which the principal employment was confined to an almost exclusively male workforce. Women often married young. Thus in these types of communities fertility did not begin to fall until financial constraints began to take hold, particularly with the onset of the First World War and the depression and unemployment of the 1920s. *(Szreter & Hardy 2000: 157).* Hemsworth, although technically still a rural district) fits very well into this pattern.

1.5 Conclusion

Although there is a broad consensus amongst both contemporary 'experts' and later twentieth century commentators regarding the causes of the secular decline in infant mortality at the beginning of the twentieth century, there was a different approach and emphasis by many of them. As far as contemporary commentators are concerned, Newsholme's emphasis is on sanitation and the environment, Newman saw 'motherhood' as the crucial factor whilst McCleary emphasised the importance of a pure milk supply for infants.

Of the recent researchers into infant mortality, Woods, Watterson, Williams and Galley all approach the problem through the urban/rural differentials, although with a slightly different emphasis in each case. This is crucial in the study of an emerging colliery community such as Hemsworth with the consequential rapid increase in population and urbanisation and will be examined in the context of the different townships within Hemsworth District in chapter 4. Szreter, on the other hand is particularly concerned with the politics of local government and how this helped or hindered the fight against high mortality rates, particularly infant mortality.

Again this is a significant factor with regard to the IMR in Hemsworth between 1871 and 1911 and will be examined in chapters 5 and 6.

It is clear that many of the factors affecting infant mortality are closely inter-related. For example, the effects of poor sanitation and ventilation are exacerbated by overcrowding, thus providing ideal conditions for contamination of milk products if the mother is unable to breast feed, or later when weaning occurs. Breast-feeding is often closely connected to fertility. Usually (although not always), the longer a mother breast-feeds her infant, the longer will be the interval to the next conception. Consequently, the mother (and therefore next baby) are likely to be healthier nutritionally, the mother will be less tired and there will be fewer mouths to feed. It therefore seems unlikely that there was just one factor involved in the secular decline in infant mortality in the early 1900s. Improved sanitation, better water supply, improved housing stock, education for girls and women (although this is difficult to quantify), the introduction of clinics as well as falling marital fertility rates all came together in the space of a few years. There is little evidence on feeding practices in Hemsworth at this time, but it is usually believed that breast-feeding was widespread (approximately 80 per cent) in colliery townships where wives and mothers did not usually work outside the home. This will not therefore be examined in detail in later chapters.

In the introduction it was explained that this thesis will examine infant mortality in Hemsworth Registration District in Yorkshire in the period 1870-1911 with particular reference to the growth of the coal mining industry in South Kirkby, one of the townships making up the registration district. Many of the initiatives discussed in this chapter, such as the introduction of milk depots, were never tried in Hemsworth but are included in this discussion in order to provide a broader picture of the importance placed upon reducing the wastage of life caused by high infant mortality. On the other hand, whilst some of the literature discussed is very relevant to the experience in Hemsworth, other literature is less so, but cannot be entirely omitted from an examination of infant mortality in this period.

LINDA MARGARET DAVIES
B.A. (Hons) OPEN – 1995

THE CONQUEST OF INFANT MORTALITY: THE CASE OF HEMSWORTH 1871-1911

THESIS FOR D.PHIL

SOCIAL SCIENCE

SUBMITTED ON
30TH SEPTEMBER 2006

2

2
HEMSWORTH REGISTRATION DISTRICT

This chapter is an introduction to Hemsworth District, giving a short geographical description of the area as well as a short history of the district in general and of some of the individual townships. The chapter is arranged as follows:

- a brief geographical description.
- social and economic change in Hemsworth over the period 1871-1911.
- introduction to South Kirkby and the agricultural townships.
- demographic issues.
- history of public health in Hemsworth district

2.1 Geographical Description

Figure 2.1 – Sketch map of the north of England showing position of major towns and counties prior to local government organisation of 1974

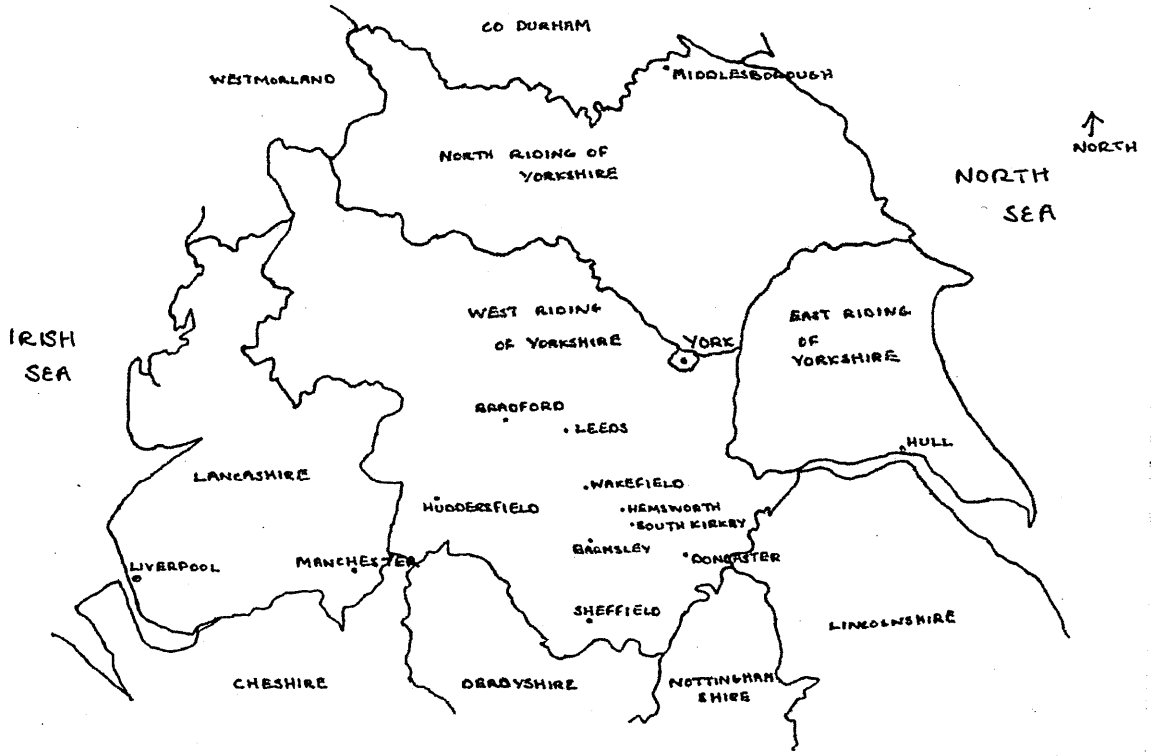
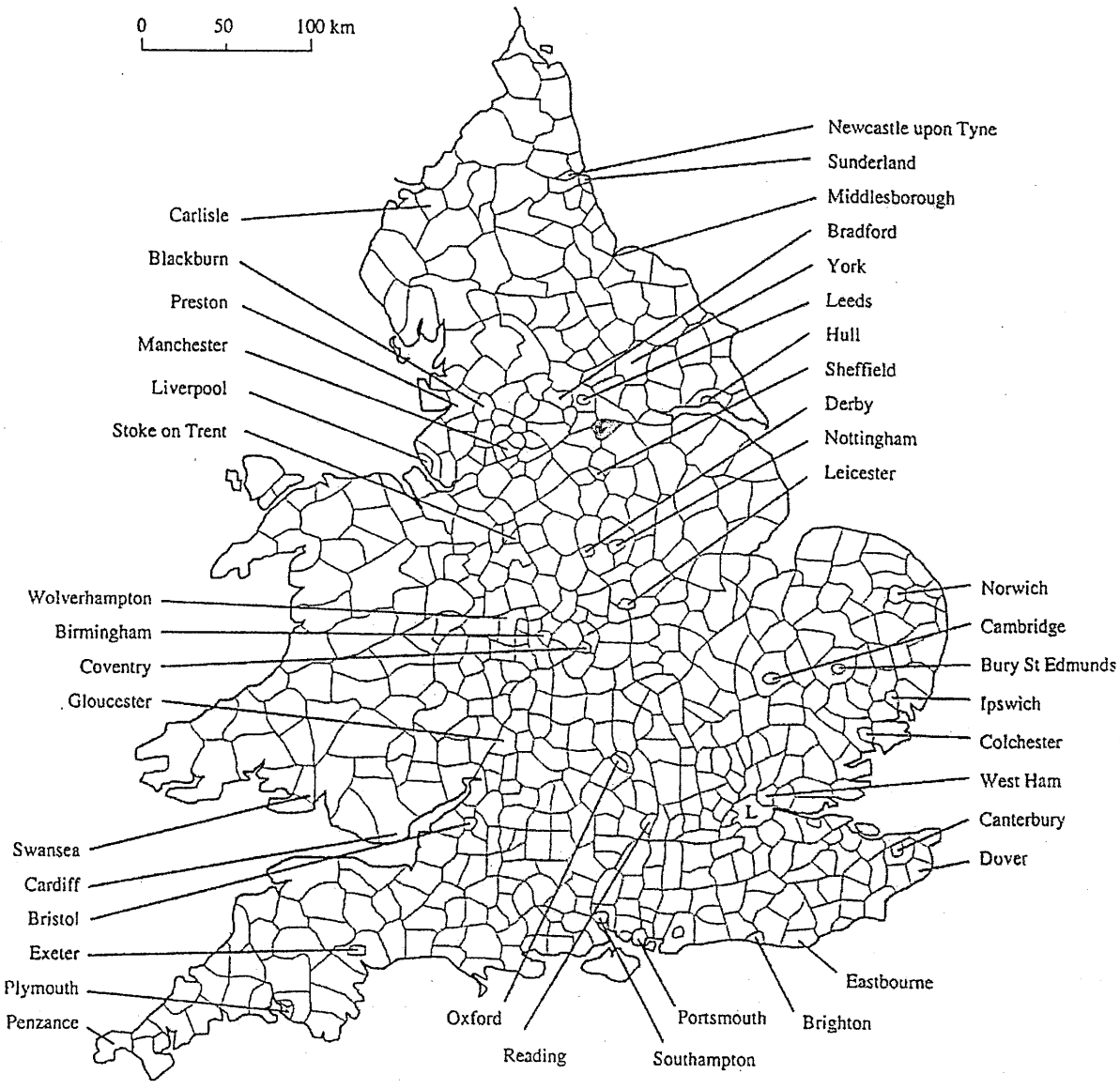


Figure 2.2 – Map to illustrate the geographical location of Hemsworth district.



Source: Woods hand out

Hemsworth Registration District covers a large area in the former West Riding of Yorkshire and is bounded by the other Registration Districts of Pontefract, Doncaster, Barnsley and Wakefield (see Figure 2.2 above which pinpoints the location of Hemsworth district within England and Wales). Until approximately the beginning of our period (1871) the area was typical of lowland rural England with agriculture the predominant activity, although there were

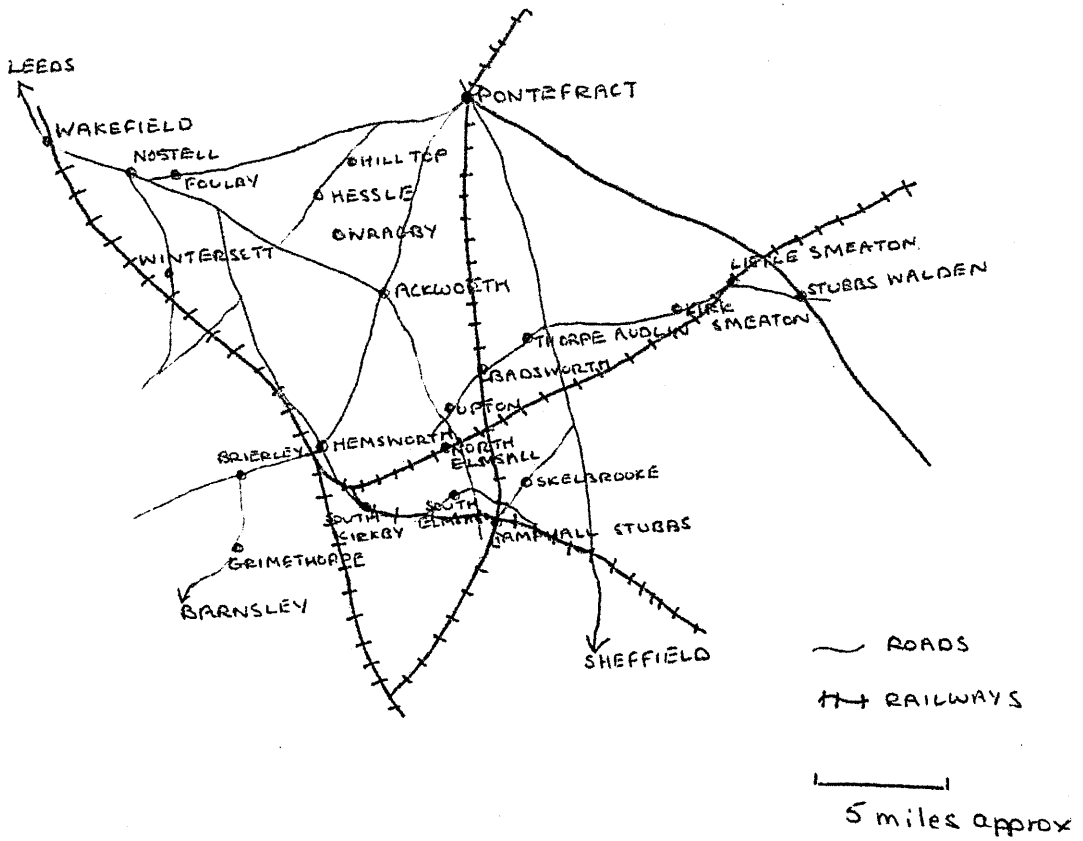
other traditional rural industries such as stone quarrying, lime quarrying, brick-making and the extraction of coal which was near the surface.

The District was characterised by a large number of small parishes and townships: Ackworth, Havercroft, Ryhall, Shafton, South Hiendley, Hemsworth, Kinsley, Little Houghton, Great Houghton, Grimethorpe, Brierley, South Kirkby, South Elmsall, North Elmsall, Badsworth, Thorpe Audlin, Upton, Wintersett, Wragby, Hessle & Hill Top, Kirk Smeaton, Little Smeaton, West Hardwick, Stubbs Walden, Skelbrooke and Hamphall Stubbs (see Figure 2.2).

According to the 1871 census, the total population for the whole Hemsworth district was 8,114, namely 4,135 males and 3,979 females. The population of South Kirkby was 522, making it one of the larger townships in the district, although still much smaller than Hemsworth (922) or Ackworth (over 1500).

Unlike the nearby large industrial cities of Leeds, Bradford and Sheffield, as well as somewhat smaller towns such as Wakefield and Doncaster – in what was then the former West Riding of Yorkshire – there was no prosperous, entrepreneurial middle class in Hemsworth. The social hierarchy was thus typical of rural England, with a few large, landed proprietors, some smaller landowners, the vicars of the various parishes, farmers (with widely varying acreages), traditional rural tradesmen (such as carters, blacksmiths, cordwainers and woodmen), agricultural workers and huntsmen attached to the Badsworth Hunt and various domestic servants employed by the gentry. There were also a number of schoolmasters who taught at Ackworth School, a private Quaker foundation. Also present were a number of shopkeepers/tradesmen such as butchers and grocers.

Figure 2.3: Sketch map of the townships in Hemsworth District and the surrounding major towns



2.2 Social and Economic Change in Hemsworth 1871-1911

In *Hemsworth in History* John Bulley (1969) notes that there were three manors in Hemsworth at enclosure. These were: Hemsworth, which was under the joint ownership of the Wood and Naylor families; Kinsley, which belonged to Earl Fitzwilliam, and Vissett which was small and was administered by the Holgate Hospital in Hemsworth *(Bulley 1969: 15).* Prior to 1855 no mines had been sunk into the concealed coalfield of South Yorkshire, although the Duke of Newcastle had found the Barnsley seam at Shireoaks (Derbyshire) in 1854. It was 150 ft below the surface and 3 ft 10 inches thick. The Dukes of Norfolk and Earl Fitzwilliam both had estates on the South Yorkshire coal seams. They generally leased their coal, although the Fitzwilliams did continue to work some of their own coal *(Bulley 1969: 17)*

In 1801 the percentage of income of the Fitzwilliam estate that derived from the mineral industry was 16 per cent, but by 1901 had risen to 76 per cent (Table 2.1). Although the value of agricultural land and earnings from agriculture had fallen sharply in the last quarter of

the nineteenth century, this increase still reflects the enormous profits which landowners could derive from mineral rights as well as working the coal reserves themselves.

Table 2.1 – Fitzwilliam estate income – 1801-1901

Year	Income from minerals	Total Income inc. rents etc	Percentage of income from minerals
	£	£	£
1801	4,214	26,135	16.1
1831	2,576	32,396	8.0
1841	11,082	43,489	25.5
1850	8,991	44,356	20.3
1871	37,210	71,281	52.2
1901	87,743	130,585	67.2

Source: Benson & Neville 1981: 21

Coal mining began on a large scale on Lord St. Oswald's land at Nostell in the 1860s (although mining for coal had taken place on a much smaller scale in shallow pits for centuries) as well as at a number of smaller collieries in the region of Havercroft, Ryhill and Shafton.

Hemsworth, Fitzwilliam Collieries opened in 1876 about a mile north-west of Kinsley and other large collieries such as those at South Kirkby and Frickley (just south of South Elmsall) followed. At Grimethorpe a whole village grew up rapidly in the late 1890s entirely due to the coal mine on what had previously been farm land. By the mid 1890s there were three seams worked at the Hemsworth Colliery – Shafton, Barnsley and Haigh Moor, employing a total of 1600 men.

Largely as a result of this mining activity, the population of the district grew from 8,114 in 1871 to 40,000 in 1911. Thus in a matter of 40 years almost 17 times as many people were added to the population of the district as had been in the previous 70. As can be seen from Table 2.2, the period when population growth was at its most rapid was between 1891 and 1911, i.e. during the main period of expansion of coal mining in the area.

Table 2.2 – Population in Hemsworth Union showing percentage growth per decade.

Year	Population	Percentage growth
		%
1801	6198	
1871	8114	31*
1881	11000	35.6
1891	14631	33
1901	23379	59.8
1911	40000	71

*the percentage growth in population here is for 60 years from 1801 to 1871.

Source for Table 2.2 – Bulley 1969

Most of the population increase was due to immigration into the area by coal miners. According to the 1881 Census Enumerator's Book (CEB) for Long Row, Nostell (a township in the west of Hemsworth District), only one of the 50 heads of household was actually born within the area covered by Hemsworth Union. The migrants came from many parts of the country; some from places not very far away such as Birstall, Hartshead and Birkenshaw, where there were a number of small mines. Others came from Durham and the Midlands. There were some from Ireland, mainly, it would seem, from the counties in the west of the country, although some immigrants did not specify even the county of origin on the CEB, let alone the parish.

Table 2.3a – Birthplace of Heads of Household in Long Row, Nostell at 1881 Census

	Number	Percentage of total
		%
Hemsworth	1	2
Yorkshire	26*	52
Rest of UK	17	34
Ireland	6	12

** Of these 26, nine were born in what was known as 'the heavy woollen district', an area south of Leeds, east of Bradford and north of Huddersfield where there were a number of smaller coal mines, such as at Birstall and Hartshead.*

Source for Tables 2.3a and b: 1881 Census Enumerators' Books for Nostell (ref 4595)

Table 2.3b – Birthplace of males over the age of 16 (excluding heads of household) in Long Row, Nostell at 1881 census.

	Number	Percentage of total
		%
Hemsworth	5	6
Yorkshire	38*	44
Rest of UK	29	33
Ireland	15	17

** Of the 38 males born in Yorkshire, 19 (50 per cent) gave a birthplace in the heavy woollen district (see above) including 3 from Hartshead, 4 from Liversedge and 2 from Birstall.*

Tables 2.3 a and b show the growing importance of the district as a magnet to miners from all over the country as early as 1881. They also show how miners were attracted away from the relatively small and shallow pits in West Yorkshire to the new pits which were extracting coal from the rich Barnsley seam.

In 1871 the population was fairly evenly spread across the district, although more thinly in the east. The main centres of population were Ackworth and Hemsworth. By the late 1890s South Kirkby, South Elmsall and Grimethorpe had all overtaken Ackworth in terms of population size and Hemsworth township had grown from being scarcely more than a substantial village to a moderate sized town, the centre of a thriving industry. In 1871-1873, 27 per cent of all births in the Union took place in Ackworth, which was then the most populous of the townships, and where stone quarrying activities were concentrated. However, by 1904-1906 births in Ackworth only represented 12.1 per cent of the total. Conversely, births in Hemsworth had risen from 8.5 per cent of the total in 1871-1873 to 21.7 per cent in 1904-06 *(Vaccination Birth Registers for Hemsworth District)*.

Table 2.4 – Changes in population in South Kirkby and the Agricultural Townships – 1801-1901

Township	Population						
	1801	1811	1851	1871	1881	1891	1901
Badsworth	182	196	222	190	226	206	189
South Kirkby	509	539	506	522	634	1444	2916
Kirk Smeaton	248	297	372	341	380	292	312
Little Smeaton	179	172	235	194	215	201	180
Skelbrooke	91	90	116	108	134	157	128
Stubbs Walden		171	165	172	148	150	132
Upton		166	255	141	259	245	237
West Hardwick		99	94	80	56	33	20
Hemsworth	803	811	997	993	1124	2368	3695
Thorpe Audlin		219	315	202	257	251	263
Wintersett		133	168	147	165	74	84
Hessle*		128	119	128	119		
Hill Top*		71	80	92	101	260	216
Hamphall Stubbs				21	24	25	30

Table 2.5 – Changes in number of houses in South Kirkby and the Agricultural Townships – 1801-1891

Township	No of houses			
	1801	**1811**	**1871**	**1891**
Badsworth	33	34	47	49
South Kirkby	113	116	119	287
Kirk Smeaton	47	49	78	81
Little Smeaton	36	35	55	51
Skelbrooke	28	15	22	25
Stubbs Walden	23	28	36	35
Upton		36	51	55
West Hardwick		20	16	8
Thorpe Audlin		43	68	67
Wintersett		32	28	14
Hessle*		28	24	
Hill Top*		18	17	55
Hamphall Stubbs			3	4

Source for Tables 2.4 and 2.5: West Riding of Yorkshire Census Reports for 1801, 1811, 1851,1871, 1891, 1891 and 1901
**Hessle and Hill Top figures were aggregated for census purposes from 1891 onwards*

In the early 1870s, coal mining was taking place only at the extreme west of the district, i.e. in Nostell, Foulby, Shafton and Ryhill, where the coal deposits were nearest the surface. However, this activity was on a much smaller scale than the deep pits which were sunk at, for example, Hemsworth, South Kirkby and Grimethorpe.

Agriculture was by far the highest employer in Hemsworth district in 1871. There was a small 'lower' middle class', consisting mainly of tradesmen (largely shopkeepers) as well as the

better off farmers. By the turn of the century the social profile of the population had completely changed from that of 30 years earlier. By now coal mining was the single most important economic activity in the area with over 70 per cent of adult males employed in the industry. The landed gentry, shopkeepers and other tradesmen now formed a much smaller percentage of the population, as did farmers and farm labourers although, according to the 1881 census, there was little change in the actual numbers of heads of household in the old rural occupations. It is the incursion of mineworkers which alters the percentages of each group.

Between 1871 and 1881 the population of Hemsworth Union grew by 2,886, an increase of 35.6 per cent. Between 1881 and 1891 the population grew by a further 3,621, or 33 per cent. After this came a period of much faster rate of increase and between 1891 and 1901 the population grew from 14,631 to 23,379, an increase of 8,748 or 59.8 per cent. However, using figures from MoH reports for the numbers of births and deaths for each year of that decade (and confirmed by the quarterly returns of the Registrar General), the natural increase (births minus deaths) amounted to 2,896. This meant that inward migration accounted for 5,852 or 66.9 per cent of the total increase. In the following decade the population grew by a further 71 per cent or 16,631. However, this time, due to the particularly high birth rate among miners, the natural increase of 11,804, did form a higher proportion (71 per cent) of the growth. Nevertheless, it remains true that a significant proportion of the population growth between 1901-1911 was due to immigration. Throughout that decade the collieries in South Kirkby, Frickley (South Elmsall) amd Grimethorpe were continuing to expand. New shafts were continually being sunk with a corresponding growth in the workforce, most of whom were relatively young men with wives of child-bearing age. Thus most of those miners who migrated to Hemsworth in the first decade of the twentieth century would have contributed to the high birth rate.

As can be seen from the figures in Table 2.6 Hemsworth had a very high proportion of males in the population and is most marked in the population aged 15-59 years and from 1881 onwards. For example, among those aged 15-19 in 1861, there were exactly the same number of males and females. However, by 1881 only 43 per cent of the population in this age group were female and 57 per cent male. Corresponding figures in 1891 the figures were 42 per cent female and 58 per cent female. In 1901 38 per cent of 16 year olds were female and 62 per cent were male. In 1911 42 per cent of 16 year olds were female and 58 per cent male. This was undoubtedly due to the large numbers of single men employed in the coal mines. The differences in sex ratios were negligible after the age of 60 at each of

the censuses. The effect of the high birth rate among miner's wives is also clear from both tables. Forty per cent of the population of Hemsworth were aged 15 years or under compared to 31 per cent for the West Riding County Council as a whole and 30.7 per cent for England and Wales. Consequently, the percentages in the older age groups, particularly for those aged 45 and over, were correspondingly lower for Hemsworth. This partly reflects the fact that relatively few miners were aged over 45 *(Census Reports 1861-1911).* The proportion of boarders in the population of South Kirkby also increased significantly over the years and this had an affect on the sex ratio. At the 1871 census, boarders formed 2.4 per cent of the population. Servants accounted for 6.3 per cent of the population and farm servants (who lived on the farm rather than in their own home) for a further 2.3 per cent. By 1891, the proportion of boarders had risen to 6.4 per cent of the population. The proportion of servants had fallen to 2 per cent and farm servants to 0.6 per cent. According to the 1901 census, boarders then accounted for 9.1 per cent of the total population of South Kirkby, servants for 1 per cent and farm servants for just 0.1 per cent. Adult males accounted for 78 per cent of the boarders in South Kirkby in 1901 and children under 16 a further 12 per cent. As far as servants are concerned, the actual numbers had remained fairly static, but the total population had grown.

Table 2.6 – Age/Sex Profile of the Population of Hemsworth District at Census 1861-1891

Year	Age	Under 5	5-9	10-14	15-19	20-29	30-39	40-49	50-59	60-69	70-74	75+
1861	males	491	444	589	369	502	427	376	293	252	71	70
	females	491	446	515	369	557	461	365	304	245	77	79
1871	males	495	494	593	399	579	481	383	311	231	92	76
	females	507	494	504	331	560	457	431	291	235	92	81
1881	males	814	640	708	578	1078	666	567	388	256	64	76
	females	754	688	616	443	817	642	466	354	242	78	78
1891	males	1090	951	953	789	1348	1101	720	462	292	88	61
	females	1033	924	831	577	1045	890	628	399	294	76	77
1901	males	1691	1495	878	1201	2275	1761	1357	825	424	112	75
	females	1654	1559	789	861	1708	1438	985	677	385	104	96
1911	males	3167	2639	2310	2041	2282	3456	2185	1330	647	160	117
	females	2997	2667	2217	1462	1731	2887	1625	737	572	128	128

Source for Table 2.6 – West Riding of Yorkshire Census Reports – 1861-1911

Overcrowding became a serious problem throughout the colliery townships from the late 1880s onward as the building of new houses failed to keep pace with the ever increasing

influx of miners and their families. Even as late as 1920 there were still numerous cases of two of more families living in one house.

Table 2.7 – Numbers of households of fewer than 5 rooms in 1891 and 1901

A: 1891

No of rooms	Number of occupants											
	1	2	3	4	5	6	7	8	9	10	11	12 or more
1	15	7	2	0	0	1	0	0	0	0	0	0
2	36	48	59	37	34	16	10	3	1	2	0	0
3	25	44	49	51	51	33	16	17	10	3	2	1
4	21	125	163	181	155	164	112	71	70	24	10	3

Source: West Riding Census Report for 1891

B: 1901

No of rooms	Number of occupants											
	1	2	3	4	5	6	7	8	9	10	11	12 or more
1	12	2	1	1	1	0	0	0	0	0	0	0
2	30	51	47	32	26	9	7	2	0	0	0	0
3	15	41	55	42	39	35	13	16	5	2	2	5
4	39	167	248	194	260	231	150	127	73	48	18	10

Source – West Riding Census Report for 1901

Tables 2.7 A and B above shows the number of households living in dwellings of fewer than five rooms at the time of the census of 1891 and 1901. Although there is little change over the course of the decade there were fewer households living in one room in 1901. In 1891 there were 25 households living in one room, but ten years later this number had decreased to 17. Similarly there were 32 households of six occupants or more living in two rooms in 1891 compared to 18 in 1901 (none of these greater than eight occupants). These figures compare favourably to those for the West Riding of Yorkshire as a whole. For example in 1891 there were 14,535 households of six or more occupants living in two rooms, 544 of these households consisting of ten or more occupants.

2.3 South Kirkby and the agricultural townships

- **South Kirkby**

South Kirkby is a township situated in the south of Hemsworth Union. Until the 1870s it was a village with agriculture forming the main economic activity.

In the 1870s the Allott family (the biggest landowners in the district) leased a considerable amount of land to the Ferryhill of Rosedale Iron Company for the purpose of opening a colliery to extract coal from the Barnsley seam. In 1876 sinking began and in 1878 found the Barnsley seam at a depth of 635 yards. Work was stopped in 1879 as expenditure of £75,778 had been incurred for no return. They also had liabilities of £230,000 *(Wilkinson 1979: 22)*. The pit was offered for sale at the King's Head in Barnsley in March 1880 and was bought by John Shaw who paid seven shillings and sixpence per shift.

In 1870 the roads were still mere cart tracks, almost impassable in winter. There were no pavements and no guttering on the houses so that rain water poured straight off the houses onto the road where there was no rain the carry the rainwater away. In the 1880s there was still no street lighting and the roads had to be improved due to the extra traffic caused by the building of new houses and for the extra horses and carts needed to collect household waste.

The first new houses to be built for the expanding colliery population were in streets off Carr Lane, which extended north from the centre of the village towards the colliery. The first houses were built in Milthorpe's Row, followed by Townend's Row and Baddily's Buildings (all speculative building by local trademen). By 1900 there were 500 houses in South Kirkby, but no mains water, and sanitary provision was still of the dry or privy midden type *(Wilkinson 1979: 113)*. When Hemsworth Rural District Council was established in 1894 this new authority stated that it would not take over the roads until they were repaired by the Parish Council. Carr Lane was a case in point here. Mr Lake of Wakefield who owned a terrace of houses at the bottom of Carr Lane refused to sign an agreement requiring him to repair his section of Carr Lane prior to its being taken over by the Highways Committee. When the clerk to the rural district council (Michael Theaker) paid a visit to Mr Lake he eventually agreed to sign. The houses in Lake Street were demolished in the 1960s. In 1896 the whole of Carr Lane was repaired to the satisfaction of the surveyor and became a public highway under the jurisdiction of the rural district council. Despite the repairs, Wilkinson states the Carr Lane was still more like a bridle track in 1898 *(Wilkinson 1979: 118)*.

Coal was first produced at South Kirkby colliery in 1883 and the colliery finally closed on 26 March 1988 despite the fact that the miners of the colliery had held the European productivity record in 1983. Throughout the period of early expansion of coal mining in South Kirkby, i.e. from about 1885 until 1905, large numbers of homes had to be built to accommodate the ever increasing mining population. In the autumn of 1884 new homes were built by the mining company and were known as 'Company's Buildings'. From the addresses given in the Vaccination Registers it would appear that Company's Buildings ceased to be inhabited after the spring of 1903, although whether they were demolished, or the name simply changed, is not clear. Later in the 1880s Percy Street was built, followed by Arthur Street and Emily Street (off Carr Lane) in the early 1890s. Records show that the first residents of Faith Street (again, off Carr Lane) moved in during the early spring of 1894 and this street consisted of 60 houses (a further 20 were added some time after 1911), 40 on the south (odd numbered) side and 20 on the north (even numbered side). Just before the turn of the century more cottages on Carr Lane were built. These were known as "Watkin's Cottages" and still stand today. Thus by the 1901 census the number of houses in South Kirkby had reached 500 *(Hemsworth Vaccination Registers and Wilkinson 1979: 25).*

In 1871 South Kirkby had a population of 522 and this was more or less stationary until 1881. However, in the late 1870s South Kirkby colliery was sunk and the population began to grow. As can be seen from Table 2.8, this growth was relatively slow until about 1890 and then, with the opening of further seams, the growth really began to accelerate. By 1920 subsidence due to coal extraction was causing some structural damage to some of the houses in South Kirkby.

Table 2.8 – Growth in Population – South Kirkby 1871-1911

Year	Population	Percentage growth in population over the decade
1871	522	
1881	634	21.5%
1891	1434	20%
1901	2916	103%
1911	7086	143%

Table 2.9 – Population Density in South Kirkby 1871-1911

	Population density per acre
1871	0.26
1881	0.32
1891	0.72
1901	1.5
1911	3.5

2.10 – Population Density in Agricultural Townships in 1911

Township	**Population density per acre - 1911**
Badsworth	0.16
Upton	0.24
Thorpe Audlin	0.23
Kirk Smeaton	0.20
Wintersett	0.08
Hamphall Stubbs	0.13
Stubbs Walden	0.11
Skelbrooke	0.12
Little Smeaton	0.16
West Hardwick	0.07

Sources for Tables 2.8, 2.9, and 2.10 – Kelly's Directories for West Yorkshire and material (not referenced) in Wakefield Reference Library.

Table 2.11 shows that the population of South Kirkby increased by 1257 per cent over the years 1871 to 1911 compared to a modest increase of 21 per cent for that of the agricultural townships. This highlights the impact of coal mining on the local community in general and the town of South Kirkby in particular. Some of the agricultural townships did have a higher population in the late 1870s/early 1880s when railway building was at its height and there were a number of temporary encampments of navvies and their families. However, this increase was purely temporary as the vast majority of the railway labourers were itinerant and once the railway work was complete they left. Reports by Dr Wrightman to the Sanitary Authority following visits to the railway labourers' camps during 1876 illustrate the conditions under which the labourers and their families lived. In March 1876 he says that he visited the 'railway huts' at Upton and found they were in a dirty state and were short or privy accommodation. There were three women's privies and two men's privies for a total of 15 huts. He also visited similar huts at Ackworth where he found very similar conditions. He paid a further visit to the huts at Upton in July of the same year when he found that they were not sufficiently ventilated and that the water supply was deficient (*Dr Wrightman 1876: 4).*

Table 2.11 – Changes in population sizes of agricultural townships compared with that of South Kirkby.

Township	Population 1871	1911	Percentage growth 1871-1911
Hessle & Hill Top	210	236	
Badsworth	190	245	
Upton	203	266	
Thorpe Audlin	202	298	
Kirk Smeaton	341	337	
Hamphall Stubbs	21	32	
Total of above	1167	1414	21%
Wintersett*		77	
Stubbs Walden*		152	
Skelbrooke*		140	
Little Smeaton*		188	
West Hardwick*		33	
Total		1901	
South Kirkby	522	7086	1257%

**These townships only became parishes after 1871*

Source: Kelly's Directories of West Yorkshire.

Table 2.12 demonstrates the impact that coal mining had on the value of the land where it took place. The table shows that despite the fact that in terms of acreage South Kirkby was not a great deal larger than some of the agricultural townships such as Kirk Smeaton, its rateable value was much higher.

Table 2.12 – Rateable Values and Acreage of Agricultural Townships and South Kirkby in 1891.

Township	Rateable Value in 1891	Area in Acres
	£	
Badsworth	2,398	1546
Hamphall Stubbs	621	239
Kirk Smeaton	2,556	1700
Little Smeaton	1,267	1043
Skelbrooke	1,358	1147
Stubbs Walden	1,897	1371
Thorpe Audlin	1,656	1311
Upton	1,416	1113
West Hardwick	647	487
Wintersett	1,537	972*
South Kirkby	15,621	2000**

*Wintersett also has 69 acres of water in the form of a reservoir, popular with anglers.
** Acreage to 1891. By 1901 the acreage of the township had been increased to 2360 acres.

Source: Kelly's Directory of West Yorkshire for 1897 and 1904

Tables 2.13 and 2.14 show how the percentages of those employed in various occupations changed over the period 1872-1911 in South Kirkby and the agricultural townships. These figures are based on the data from the Vaccination Registers and therefore do not take into account the occupations of single men and those whose wives were beyond child-bearing age. They also include the mothers of illegitimate children. The figures are broken down into different types of occupations rather than social class with the exception of upper class (according to Armstrong) and those members of the middle classes not already included in other groups, e.g. agriculture and tradesmen. Thus, agriculture includes farmers as well as farm labourers, shepherds and farm bailiffs. The category 'tradesmen' includes tailors, shoemakers, butchers, grocers, saddlers and blacksmiths. Servants are usually grooms, coachmen and butlers. Also a considerable percentage of the illegitimate births were to women employed as domestic servants. The figures for quarrying include both stone quarries and lime quarries.

Table 2.13 – Percentages of the Male Working Population employed in selected fields of employment in South Kirkby, 1872-1911

	1872-75 %	1876-80 %	1881-85 %	1886-90 %	1891-95 %	1896-1900 %	1901-05 %	1906-11 %
Agriculture	36.2	16.5	12.9	6.9	3.3	3.8	0.3	1.6
Tradesmen	32.0	17.6	3.4	9.5	4.0	3.4	2.6	3.8
Servants	2.1	3.5	3.0	0.7	0.4	-	0.3	0.4
Railway Construction	-	7.1	10.6	2.9	0.7	0.7	0.3	0.5
Coal Mining	-	7.1	24.2	68.0	81.5	82.7	86.9	85.0
Upper Class	6.4	1.2	0.8	0.4	-	0.2	-	0.2
Other Middle Class	-	3.5	4.5	1.1	0.4	1.1	1.0	0.6
Illegitimate	8.5	5.9	3.0	4.7	2.5	4.1	5.1	3.3
All others	12.6	32.9	34.6	5.4	6.8	4.0	4.4	4.5

Table 2.14 – The Percentages of the Male Working population employed in selected fields of employment in the Agricultural Townships 1872-1911

	1872-75 %	1876-80 %	1881-85 %	1886-90 %	1891-95 %	1896-1900 %	1901-05 %	1906-11 %
Agriculture	45.6	45.8	38.8	43.0	39.0	43.9	39.7	45.8
Tradesmen	21.1	17.6	11.5	12.2	6.5	8.3	7.4	7.1
Servants	5.4	8.1	7.6	9.8	10.9	9.3	8.3	8.3
Railway Construction	1.5	3.5	18.8	10.1	10.5	5.4	11.6	6.5
Coal Mining	9.3	6.0	1.5	2.4	4.8	3.9	5.0	8.3
Upper Class	1.0	1.4	1.8	2.4	2.0	2.0	0.8	1.8
Other Middle Class	1.5	0.7	2.1	2.1	3.2	4.4	0.8	2.5
Illegitimate	3.4	4.9	6.8	4.5	4.0	4.4	4.1	3.0
All others	7.2	6.0	9.6	12.5	15.1	11.6	18.2	14.9

Source for Tables 2.13 and 2.14 – Vaccination Birth Registers for Hemsworth

Tables 2.13 and 2.14 show the decrease in the proportion of tradesmen in the agricultural townships as well as in South Kirkby. This would seem to be due to a drop in the numbers of shoemakers, cobblers and blacksmiths and may reflect the growing availability of factory made goods. However, in actual fact there was an increase, particularly in South Kirkby, in the number of grocers, greengrocers and hairdressers, although that increase was insignificant in comparison to the huge increase in the mining population (Table 2.13). This figure is probably an overestimate as, being based on the Vaccination Birth Registers, it

reflects not only the actual number of miners but also their fertility, which was higher than that of other members of the population. During the period 1872-75 not a single birth in South Kirkby was to the wife of a coal miner, but in the space of twenty years the colliery population increased to the extent that over 80 per cent of births in the 1890s were to the wives of miners. On the other hand, the corresponding figures for agricultural workers in South Kirkby fell from 36.2 per cent of the total births in 1872-75 to 3.3 percent twenty years later. There was a decline in the numbers of upper and middle classes until they were almost non-existent apart from a few better off shopkeepers as well as teachers and colliery managers. There was also a corresponding decline in the numbers employed as servants.

- **Agricultural Townships**

Figures 2.4-2.6 at the end of this chapter show the agricultural townships in more detail and their position in relation to one another. These townships are those which remained purely agricultural after mining for coal began in earnest in the area. The chief crops grown in the agricultural townships were wheat, oats, barley, turnips potatoes, peas and beans, with some local variations, e.g. peas and beans were mostly grown in Thorpe Audlin, whereas turnips were grown in West Hardwick and Kirk Smeaton and potatoes were grown in Little Smeaton. The cereal crops were common to all of the townships. There is evidence, from the ages of the churches *(Kelly's Directory for the West Riding of West Yorkshire 1897)* that settlements had existed (and presumably the land farmed) in the area covered by the Hemsworth Union since at least the sixteenth century. Skelbrooke parish registers date from 1587 even through the parish consists of only three farms and a few cottages *(Kelly's Directory for the West Riding of Yorkshire, 1897).*

The land on which the townships stand was owned by various families. For example, Lord St Oswald of Nostell Priory was the landowner in Hessle and Hill Top and Viscount Mountgarret was the chief landowner and lord of the manor of Wintersett. Percy Sandford Neville, JP, was the sole landowner and lord of the manor in Skelbrooke, while at Upton, Messrs Fernandez and Gill were joint lords of the manor and, together with Mrs Heywood-Jones, owned all the land there. Mr Fernandez was also the brother of Dr Fernandez, a GP, practising in the township of Ackworth where he was also the public vaccinator.

In the agricultural townships farming and allied trades, such as saddlers, carters, remained by far the largest employer, although the numbers employed as railway platelayers increased dramatically during the 1880s. Table 2.14 shows that this increase was most noticeable in

the period 1881-85. It is perhaps significant that illegitimate births were also at their highest in the same period. In 1872-75 9.3 per cent of births in the agricultural townships were to miners' wives and these were in the villages to the west of the district, i.e. Wintersett, West Hardwick, Hessle & Hill Top, where coal mining in shallow pits was carried out prior to the sinking of the deep pits. After that the number of miners in the agricultural townships decreased, although rose again slightly in the early years of the twentieth century This was largely due to over-crowding in the colliery townships which obliged many families to find lodgings in the agricultural areas. The numbers of 'upper classes' and 'other middle classes' (and consequently, servants) remained reasonably steady throughout the whole forty year period. The 'upper classes' were usually landowners and vicars, and there was at least one 'big house' in each of the townships which provided employment for gardeners, coachmen and other servants.

Although it was based on information gathered during the 10 year period 1911-1920, i.e. just after the end of the period of study, the 1921 Sanitary Survey of Hemsworth Registration District, gives a good picture of many of the townships. According to this survey in Badsworth privy middens were still in use with a few pail closets. There had been no change in the population and number of houses during the last century. The survey also reports that the houses in those villages which remained purely agricultural seldom have any form of damp course. The report singles out the houses at Hessle and Hill Top for special mention. It is reported that the owners of the of the houses there have paid special attention to outside conveniences; each house is provided with a combination of coal place, privy and pig stye.

In South Kirkby, despite the fact that much of the housing was newly built, there were still 1200 privy middens and only 400 WCs. This was also mentioned with regard to Grimethorpe where the housing was almost entirely new. Once again the sanitation provided was mainly of the privy midden type, which the survey states was 'regrettable in a new district'.

In the Hemsworth Union as a whole many toilets were still of the privy midden type and often defective and dilapidated. The unpaved yards and back streets accentuated the danger from these privies, especially when the decomposing contents were thrown out upon them before being removed by cart. With regard to the township of Hemsworth, mention was made of house-holders keeping poultry, pigs and manure pits in close proximity to dwellings.

2.4 Demographic issues

Table 2.15: Marital Status of Males and Females in South Kirkby at 1901 Census

	Number of Males			Number of Females		
Age	**Married**	**Single**	**Widowed**	**Married**	**Single**	**Widowed**
16-20 yrs	3	131	-	10	71	-
21-25	36	98	1	64	24	1
26-30	100	45	1	104	12	-
31-40	161	45	5	144	12	2
41-50	127	33	16	95	3	4
51-60	50	4	9	36	2	9
60+	29	2	14	21	-	16
Totals	506	318	46	474	124	32

Source: 1901 CEBs for South Kirkby

Table 2.15 illustrates that there were more males than females (870 males and 630 females) over the age of 16 living in South Kirkby in 1901. Although the numbers of married males and females were not very disparate, there were almost 200 more single males than females. Interestingly, there were also more males than females who were widowed at every age apart from over the age of 60. Whether this was due to women dying from complications arising out of childbirth is impossible to say.

Although the figures in Table 2.16 are based on the 1901 CEBs for five of the agricultural townships, there is quite a marked difference in the ratios of males to females compared to those in South Kirkby. In this sample there were 164 males and 172 females. Again, married males and females are almost exactly equal and although the numbers for single males and females are very similar, in the agricultural townships single females outnumbered single males.

Table 2.16: Marital Status of a sample of residents of the agricultural townships at 1901 Census.

	Number of Males			Number of Females		
Age	Married	Single	Widowed	Married	Single	Widowed
16-20 yrs	1	25	-	2	33	-
21-25	3	19	-	3	18	-
26-30	6	12	-	6	5	-
31-40	23	7	-	25	6	3
41-50	21	1	1	20	7	3
51-60	20	1	2	20	3	1
60+	16	2	4	13	3	1
Totals	90	67	7	89	76	7

Source: 1901 CEBs for Badsworth, Hamphall Stubbs, Little Smeaton, Skelbrooke and Wintersett

Figure 2.4 – Age profile in South Kirkby at 1901 census

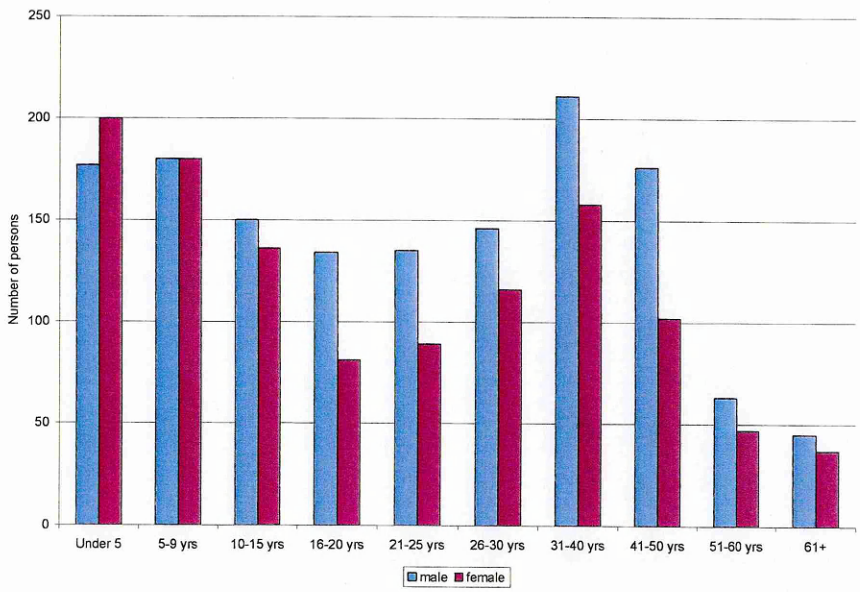
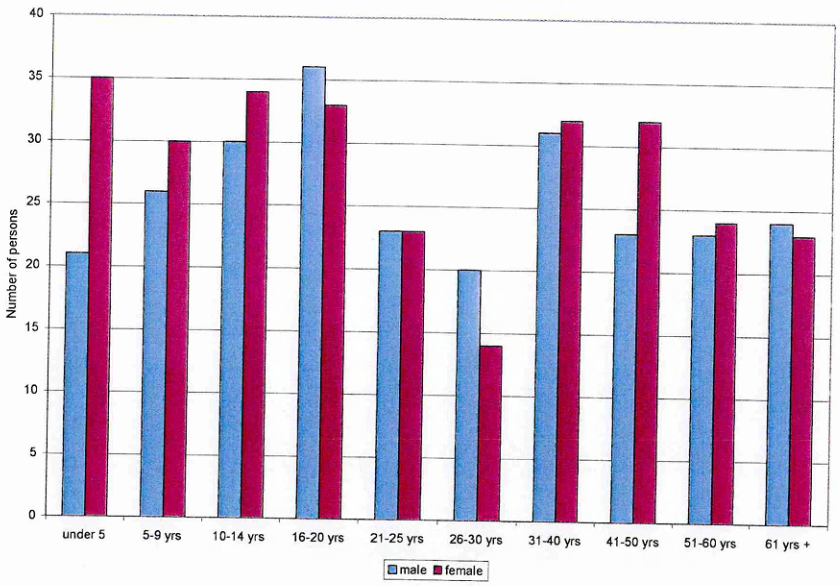


Figure 2.5 – Age profile in Agricultural Townships at 1901 census



Source for Figures 2.4 and 2.5: Census Enumerators Books For South Kirkby, Badsworth, Hamphall Stubbs, Little Smeaton, Skelbrook and Wintersett

Figures 2.4 and 2.5 show the age/sex profile for South Kirkby and five of the agricultural townships. Apart from in the two youngest age groups, Figure 2.4 shows that males consistently outnumber females in every age group. This is particularly noticeable between the ages of 16-50 – the age groups into which most coal miners would fall. By contrast, the numbers of males and females are very similar in every age group in the agricultural townships in Figure 2.5, apart from in the youngest three age groups where they are more females than males. Another difference between the two is that there are proportionally far fewer in the oldest two age groups in South Kirkby than in the agricultural townships.

From Table 2.17 it is clear that most women in South Kirkby were married by the time of their twenty-third birthday which obviously had implications for fertility, and consequently the number of pregnancies women were likely to have. This, in turn, had an impact on infant mortality. This compares to a mean age at marriage of 25.2 years for women in class I, 23.0 years for class IV and 23.4 years for class VIII according to the 1911 Census, England & Wales *(Drake, 1997)*. However, very few women worked outside the home in South Kirkby, and according to the 1901 census, of the 152 married women and 36 single women (188 in total) only 25 had an occupation. Of the 10 married women and 51 single women (61 in total) aged 17-20, 39 had an occupation. However, where this occupation was of a domestic nature it is not always clear whether this involves working outside the family home.

Table 2.17: Numbers of married and single young women (aged 17-30) in South Kirkby at 1901 Census.

Age in yrs	Married	Single
17	1	13
18	1	18
19	3	12
20	5	8
21	7	7
22	13	7
23	12	5
24	10	3
25	18	3
26	17	3
27	23	3
28	23	2
29	11	2
30	18	1
Totals	162	87

Source: Census Enumerators Books for South Kirkby for 1901.

Table 2.18a: Numbers of young people (males aged 13-16 and females aged 13-20) in employment in South Kirkby according to 1901 Census.

	Number of males		Number of females	
Age in yrs	Working	Not working	Working	Not working
13	14	11	-	24
14	23	9	7	10
15	17	4	4	25
16	24	1	7	9
17-20			13	39
Total	78	25	31	107

NB:The numbers of males working and not working aged 17-20 were not calculated as all males over the age of 16 were in employment according to the 1901 census.

Table 2.18a shows that more than three-quarters of boys in South Kirkby aged 13-16 were in employment, most of them as pony keepers in the coal mine. Clearly, most boys had finished their education by their fourteenth birthday. No girls aged 13-16 in South Kirkby were listed in the 1901 CEBs as 'scholar'; education for girls was obviously not regarded as important as staying at home and helping to look after their younger siblings. In addition to those listed as working in the agricultural townships, one twelve year old girl was listed as working as a general domestic servant. There were two males aged 17 and over who were not working: a 16 year old who was listed as 'delicate' in the CEB and the 18 year old son of the registrar and whose 20 year old brother was listed as a student at Oxford University. The males who

were working in the agricultural townships were employed in various agricultural roles and the females were employed in domestic service (see appendix 2.2).

Table 2.18b: Numbers of young people (aged 13-20) in employment in the agricultural townships according to 1901 Census.

	Number of males		Number of females	
Age in yrs	**Working**	**Not working**	**Working**	**Not working**
13	3	4	2	1
14	5	2	6	3
15	5	1	2	3
16	8	1	2	3
17-20	16	1	10	9
Total	37	9	22	19

Source for tables 2.17a and 2.17b – Census Enumerators Books for 1901 for South Kirkby, Badsworth, Hamphall Stubbs, Little Smeaton, Skelbrooke and Wintersett

Table 2.19: Occupation of Heads of Household in South Kirkby according to 1871, 1891 and 1901 censuses.

Occupation	**1871**	**1891**	**1901**
Coal Miner	-	103	289
Other colliery workers	-	21	42[1]
Agricultural workers	48	27	32[2]
Tradesmen	24	19	31[3]
Professional/Upper class	4	6	9[4]
Middle class	3	6	13[5]
No occupation	7	11	5[7]
Female heads	10*	13*	23[6]
Others	18	26	51
Total	110	219	495

* - The female heads are not included in the total as their occupations are covered by the other groups
[1] – These included colliery labourers, lampkeepers, carpenters etc.
[2] – These comprised 26 farmers, 5 farm workers and 1 retired farmer.
[3] – These included various shopkeepers, plumbers, shoemakers etc.
[4] - These comprised 2 clergymen, 1 gentleman, 1 solicitor, 1 surgeon and 4 living on independent means.
[5] - These included 1 chemist, 1 construction manager, 1 manufacturer, 1 parish clerk, 1schoolmaster etc.
[6] - These comprised 1 laundress, 1 charwoman, 1 grocer, 1 retired dressmaker, 3 living on own means and 16 of no occupation (but whose sons/grandsons were living at home and working)
[7] – In all cases (1871, 1891 and 1901) the heads of household with no occupation are all widows with sons/daughters living at home and in employment.
Source - CEBs for South Kirkby

Table 2.19 shows that by 1901 the overwhelming majority of heads of household in South Kirkby were employed in coal extraction where thirty years earlier no one at all had earned their living through coal mining.

Table 2.19b: Occupation of Heads of Household in five agricultural townships according to 1901 census.

Occupation	Heads of Household
Coal Miner	3
Other colliery workers	1
Agricultural workers	52
Tradesmen	6
Professional/Upper class	5
Middle class	7
No occupation	4
Female heads	17*
Others	19
Total	101

* - The female heads are not included in the total for the agricultural townships as these have already been included in the other occupations and included 3 farmers, 2 farm workers, 1 grocer, 1 laundress, 3 living on own means, 1 teacher, 1 seamstress, 1 weaver, 1 kept by the parish and 3 of no occupation (all widows being supported by their children)
Source: CEBs for Badsworth, Hamphall Stubbs, Little Smeaton, Skelbrooke and Wintersett

Comparing tables 2.19 and 2.19a, it is immediately obvious that whereas the vast majority of heads of household in South Kirkby were employed in the coal mining industry in both 1891 and 1901, the majority of residents of the agricultural townships earned their living through agriculture. Also it is noticeable that women account for a higher proportion of heads of household in the agricultural townships than in South Kirkby. Part of this is due to widows continuing to run the family farm, usually with the support of their sons, as well as a few middle/ upper class single women (or widows) living with other family members and a number of servants.

Table 2.19 shows coal miners as being even more predominant than, table 2.18. This is explained by the fact that table 2.19 gives occupations of parents (mainly fathers) of newly born infants and these are therefore younger men than the heads of household as given in table 2.18. According to this data the illegitimate birth rate was only 1.95 in South Kirkby for

the period 1901-1905 and 3.0 for the period 1906-1910. In the agricultural townships the illegitimate birth rates were 3.0 for both periods.

Table 2.20: Occupation of Parents as given in Vaccination Birth Registers 1901-1910

Occupation	Numbers -1901-1905		Numbers - 1906-1910	
	South Kirkby	Agricultural Townships	South Kirkby	Agricultural Townships
Coal Mining	267	4	875	11
Agriculture	1	50	16	69
Railway workers	4	18	10	17
Tradesmen	8	11	39	6
Upper/Middle class	6	4	6	3
Servants	1	7	4	7
Illegitimate	16	4	34	5
Others	8	22	47	30

Source: Hemsworth Vaccination Registers 1901-1910.

2.5 History of public health in Hemsworth district

Under the Public Health Act of 1872 each Poor Law Union in England and Wales was obliged to establish a Local Sanitary Authority to oversee the sanitary health of the country. These authorities were also obliged to appoint Medical Officers of Health.

In Hemsworth the first meeting of the Sanitary Authority was held in the Board Room at Hemsworth Union Workhouse on 22nd August 1872. Those present were the Reverend Champneys (vicar of Hemsworth, and in the Chair), William Henry Leatham, JP, esq., Vice Chairman, ex-officio Guardian, and Messrs Nelstrop (farmer), Proctor, Wigglesworth (farmer, Scholey (grocer, draper and sub-postmaster), Ryder and Pearson. Apart from the Chairman and Vice-chairman, who were both from the upper classes, all the members were from the lower middle class, the class that bore most of the burden with regard to rates. The make up of the Sanitary Authority remained much the same with various farmers and shopkeepers serving in their turn (although the Chairman and Vice-chairman were usually the vicar and a local landowner), until its powers were handed over to the Rural District Council in 1895. The members of the Sanitary Committee were already Guardians who administered the Poor Law

within the Registration District. This, and the Sanitary Authority was the only form of local government in Hemsworth District until the Rural District Council was established in 1895.

The make up of Hemsworth's local government contrasted sharply with that of many of the great Victorian towns and cities which had large middle classes who derived their wealth from the new manufacturing industries. They were active in the establishment of the municipal institutions which competed in building lavish civic halls the reflect the status of their town. Many of these entrepreneurial middle-classes were non-conformists who eagerly took up the 'civic gospel' of Chamberlain and others and were eager to serve their town by effecting improvements for the good of the whole community and not just their own class.

The penny-pinching attitude of the members of the Sanitary Authority in Hemsworth are illustrated in the following comment from Dr Coleman in his Annual Report for 1889:

> Old vested interests too much opposed to change are difficult to convince that the needs of a small agricultural population will not suffice for the requirement of the future *(Coleman 1889: 1)*.

He thus forcibly pointed out that the conditions which in former years had sufficed for the smaller agricultural population were completely inadequate for the present increasing colliery population.

Initially the members of the Sanitary Committee tried to persuade neighbouring Sanitary Authorities (i.e. Doncaster and Pontefract) to jointly employ (with Hemsworth) a Medical Officer of Health and thus share the expense. However, this suggestion was turned down and the decision was therefore taken to advertise for candidates for the posts of Medical Officer of Health and Inspector of Nuisances at annual remunerations of £100 and £75 respectively.

In 1873 Dr Wrightman was duly appointed as Medical Officer of Health (MoH) for Hemsworth and Mr Thomas Scholey was appointed to act as Inspector of Nuisances. Dr Wrightman resigned in March 1878 as he was 'ordered' abroad. He was replaced by Mr William Dyson Wood of Doncaster appointed at a salary of £40 per annum for three years. This was less than half the salary paid to Dr Wrightman and perhaps reflects the lack of importance attributed to this role by the committee members. In July 1879 Dr Wood gave three months notice due to an appointment in Oxford. Two months later his brother, Dr Francis Henry Wood, was appointed. He served as MoH for Hemsworth for four years until 1883 when Dr G

E Coleman was appointed, initially for three years, although he continued in the post until 1906. He was succeeded by Dr Wiltshire. The first Inspector of Nuisances was Thomas Scholey, who was postmaster in the township of Ackworth, the brother and cousin of two of the Board of Guardians. He was appointed in 1873 on a salary of £75 per annum (£100 was originally suggested). Many of the 'nuisances' were caused by the smaller traders, such as the offensive smell caused by one of the local butchers when fat rendering. Mr Scholey had his appointment renewed every September until the establishment of the Rural District Council in 1895 *(Minutes of Hemsworth Rural Sanitary Authority 1872-1894).*

The Public Health Act of 1871 sought to ensure that compulsory vaccination of all babies against smallpox – introduced in 1853 – was made effective. To this end Vaccination Officers had to be appointed for each registration district (see Chapter 3 for their duties). Throughout the whole of the period 1871 to 1911 Mr Francis Burkitt was the vaccination officer for Hemsworth at a salary of £15 per annum (in 1871). He was also Union's Registrar for Births, Marriages and Deaths for which he was paid a separate salary. Mr Burkitt attended different parts of the Registration District on different days of the week. For example, he attended Ackworth every Monday at 10 am for the registration of births for both the general register and the vaccination register.

There were different public vaccinators for different parts of the Union and vaccinations were performed in different townships and villages on different days of the week. April and October were the months when most of the clinics for public vaccinations were held. For example, Dr Coleman, MoH for Hemsworth, also served as Public Vaccinator for the east of the district. He vaccinated in Hemsworth itself at 9 am on the last three Mondays in January, March, June and September. He vaccinated babies in Brierley on the first three Mondays in April and October at 10.30 am, and at Havercroft on the first three Mondays in April and October at 1.00 pm (*Hemsworth Vaccination Register of Births, Vol 37, 1897).*

Dr Wrightman delivered his first report to the committee on 4th September 1873. He found that the district was generally healthy, but that there were some cases of (unspecified) 'fevers'! He reported that there were three cases of 'gastric fever' and one of Typhoid fever in Little Smeaton in July 1873, but that no deaths occurred as a result. However, in the same month there was one death from an unspecified fever at Kirk Smeaton where it was found that the pump well was polluted by sewage. Moreover, at the end of July there were two cases of scarlet fever at one of the townships. These were the children of a Timothy Jagger and the fever was found to be caused by the cesspool adjoining the house wall being full of

old sewage. This was ordered to be cleansed immediately. In August Dr Wrightman visited the home of Charles Rhodes, a butcher, where there had already been three fatalities from diphtheria. He found that the house was very dirty and that the cellar where milk and food were stored had walls and floor thick with dirt and there was some putrid meat said to be 'very offensive'. The bedroom where the patient was lying had no ventilation; the window being shut and the fireplace blocked up. The doctor ordered all the fireplaces to be opened out to allow for proper ventilation and for the house to be thoroughly cleansed. There was also 'a great nuisance' from the waste in the adjoining slaughterhouse (*Dr Wrightman 1873: 3).*

These cases illustrate the levels of ignorance which existed regarding hygiene and sanitation and the task which faced the first MoH in Hemsworth, both to educate and persuade the committee to spend the necessary money on improvements to the water supply and sanitation. Moreover, this was in 1873, before large scale coal mining began with the accompanying massive increase in population. However, despite these cases the death rate in Hemsworth during July and August 1873 was only 13 per 1000 population, 'only' four of which (all mentioned above), out of a total of 17, were preventable. During the same two months there were 35 births, i.e. twice the number of deaths.

In the autumn of 1873 Dr Wrightman made a careful inspection of the whole district. He found that in many townships the drainage had been badly neglected '...in many places are were no proper drains – in others they are obstructed causing offensive accumulation of sewage. Many cottages are without any form of privy accommodation and the privies and ashpits of others are very dirty and neglected' *(Dr Wrightman 1874: 1).*

He also found that many houses were damp as they lacked spouting and felt that this was a cause of disease, sometimes fatal. He also found that many dwellings had adjoining pig-styes which were very objectionable. He said there was 'filthy, liquid soil percolating through walls making the cottages damp and unhealthy' (*Dr Wrightman 1874: 2).* He reported that during the last six months of 1873 there had been outbreaks of fever at a number of townships including Little Smeaton and South Kirkby. He stated that in cases the origin could be easily traced and that simple precautions could have prevented the deaths from fever and even more from diarrhoea.

Access to a supply of plentiful, pure drinking water was probably the greatest problem for the inhabitants of Hemsworth district during this period and this problem became more serious

every passing year with the ever increasing growth in the population of the colliery townships. In 1891 the *Wakefield Express* reported on a meeting of the Sanitary Authority which stated that eight sample of water had been taken from various sources in the Hemsworth district. Only one, at Brierley Gap, was fit for drinking. The water from one of the sources contained impurities of animal origin. This water supplied a number of cottages owned by a widow. She was given notice to discontinue the use of this water and to provide her cottages with a better supply. They were also referred to in Dr Coleman's Annual Report for 1888 when he said that the property was mortgaged and the owner, Mrs Rothery, was not able to afford the necessary work with regard to defective drainage, ashpits and privies (*Coleman, G E 1888: 3)*. Dr Coleman mentioned these cottages again in his Annual Report for 1889 when a magistrate's order was obtained requiring the cottages to be provided with some form of adequate sanitation.

In 1895 Hemsworth Rural District Council (chapter 4 and 5) took over the responsibilities of the Sanitary Authority and did not become an urban district until 1930.

2.6 Conclusion

What comes out of this account of the Hemsworth Registration District in the last quarter of the nineteenth century is the enormous impact the mining of the Barnsley main seam had on the area. Population in the parishes where this occurred grew very rapidly, mainly through immigration but also from natural increase. This led to a young population and an imbalanced sex ratio. The excess of men in the younger age groups and the high wages they enjoyed led to early marriage for women which brought about the high fertility, so characteristic of mining areas. Because the area had been almost entirely agricultural before the advent of deep mining it did not have a significant middle class. This resulted in the local authority being dominated by petty tradesmen and farmers, exemplified in the make up of the Sanitary Authority that was created in 1872 at about the time the mining boom commenced. The members of this body had neither the experience nor the expertise to deal with the novel situation created by the large influx of miners, as is evident from a number of their decisions. Hemsworth then provides an interesting area for the study of infant mortality, in part because of the sharp contrast between the mining and agricultural parishes and in part because, as in so many industrial areas in the first half of the nineteenth century, it was ill prepared to cope with a rapidly growing population and a novel economic development.

Figure 2.6 – Map of Kirk Smeaton, Little Smeaton, Thorpe Audlin, Skelbrooke and Upton

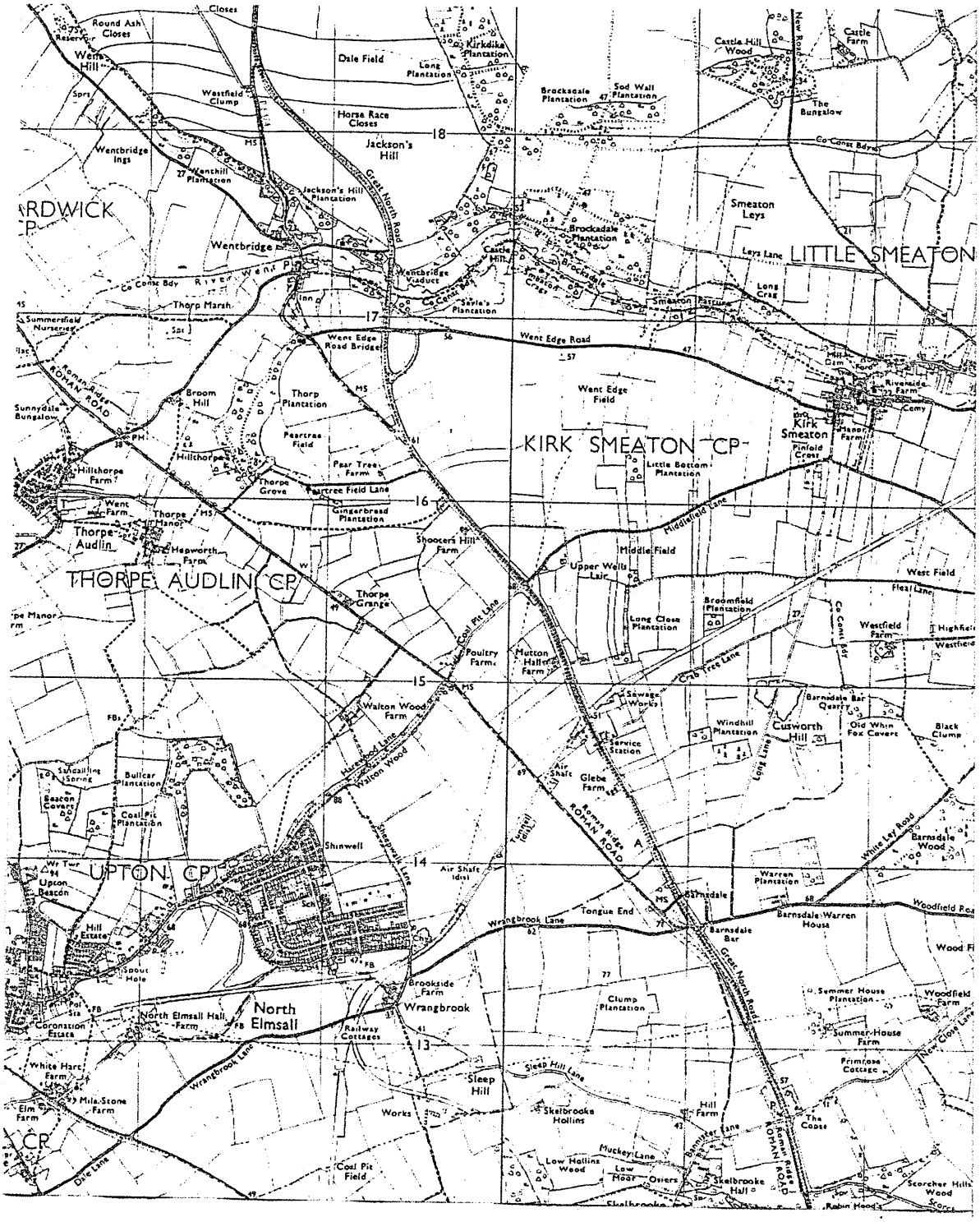

KIRK SMEATON CP
LITTLE SMEATON
THORPE AUDLIN CP
UPTON CP
North Elmsall
Wentbridge
Kirk Smeaton
Thorpe Audlin
Upton
Jackson's Hill
Went Edge Road
Middlefield Lane
Cusworth Hill
Skelbrooke
Sleep Hill
Wrangbrook
Roman Ridge ROMAN ROAD
Great North Road
River Went
Thorpe Marsh
Thorpe Plantation
Broom Hill
Hillthorpe
Thorpe Grove
Thorpe Manor
Thorpe Grange
Walton Wood
Shinwell
Brockadale Plantation
Sod Wall Plantation
Kirkdike Plantation
Castle Hill Wood
Smeaton Leys
Middle Field
West Field
Broomfield Plantation
Windhill Plantation
Barnsdale Bar
Barnsdale Wood
Tongue End
Clump Plantation
Skelbrooke Hall
Hill Farm
Low Hollins Wood
Muckey Lane
Sleep Hill Lane
Wrangbrook Lane
Walton Wood Lane
Coal Pit Lane
Middlefield Lane
Cross Tree Lane
Went Edge Road Bridge
Wentbridge Viaduct
Wentbridge Ings
Horse Race Closes
Dale Field
Went Edge Field
Pear Tree Farm
Pearetree Field
Pearetree Field Lane
Gingerbread Plantation
Little Bottom Plantation
Long Close Plantation
Shoocers Hill Farm
Poultry Farm
Mutton Hall Farm
Glebe Farm
Service Station
Sewage Works
Barnsdale Bar Quarry
Old Whin Fox Covert
Black Clump
Warren Plantation
Barnsdale Warren House
Summer House Plantation
Primrose Cottage
The Copse
Scorcher Hills Wood
Robin Hood's
Brookside Farm
Railway Cottages
Coronation Estate
North Elmsall Hall Farm
White Hare Farm
Mile-Stone Farm
Elm Farm
Coal Pit Field
Skelbrooke Hollins
Low Moor
Osiers
Hillthorpe Farm
Went Farm
Heaworth Farm
Sunnydale Bungalow
Summersfield Nursery
Upton Beacon
Hill Estate
Spout Hole
Bulcar Plantation
Coal Pit Plantation
Beacon Covert
Saucalling Spring
Jackson's Hill Plantation
Wentbridge Plantation
Castle Hill Plantation
Sayle's Plantation
Castle Hill
Castle Farm
The Bungalow
Riverside Farm
Manor Farm
Pinfold Crest
Westfield Farm
Highfield
Woodfield Farm
Woodfield Road
Summer House Farm
New Close Lane
Long Cross
Long Lane
Tunnel Field
Air Shaft (dis)
Air Shaft
Co Const Bdry
Co Const Bdry
Co Const Bdry

Figure 2.7 – Map of Badsworth, West Hardwick, Hessle and Hill Top and Wragby (as well as Ackworth and Hemsworth)

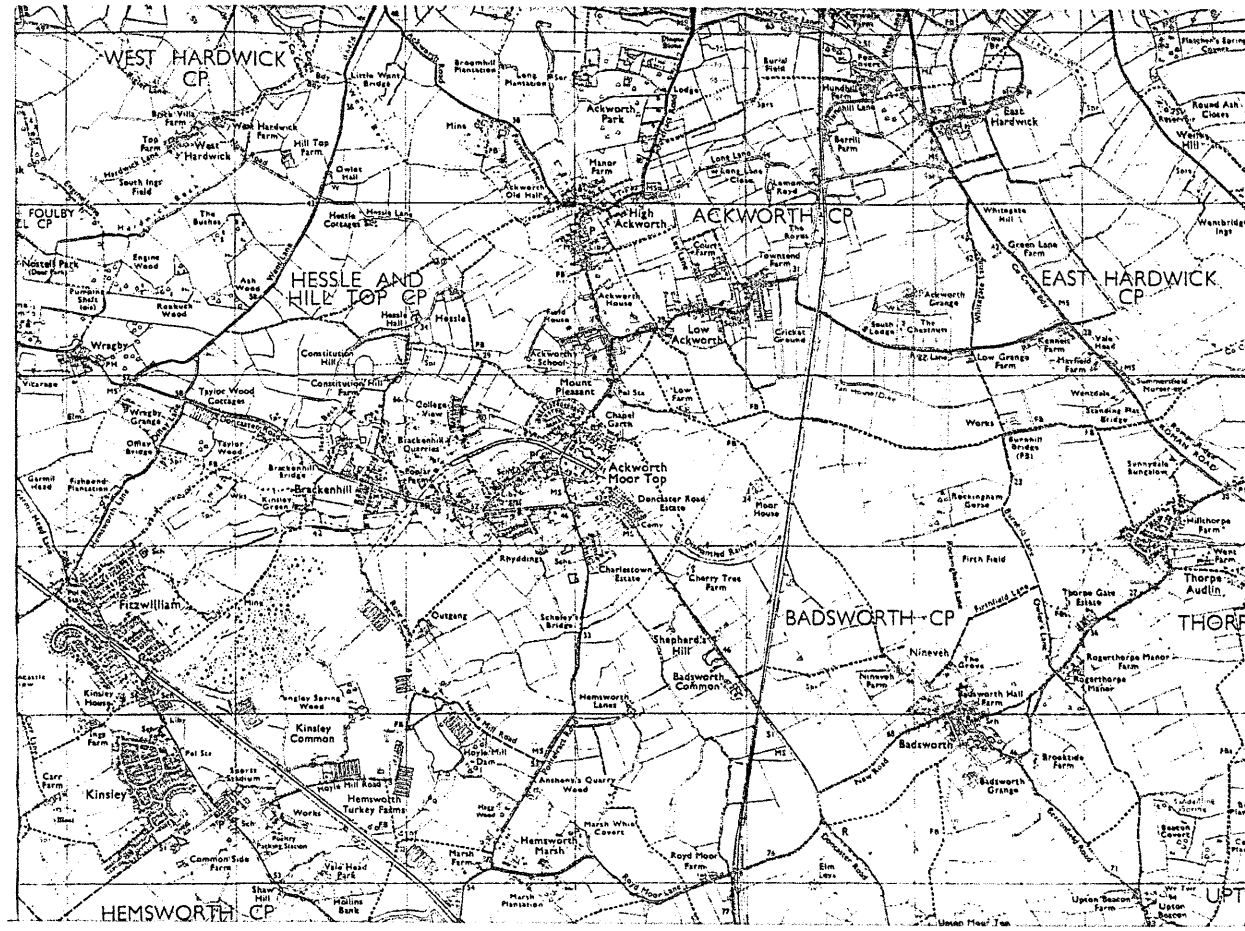


Figure 2.8 – Map of Little Smeaton and Stubbs Walden

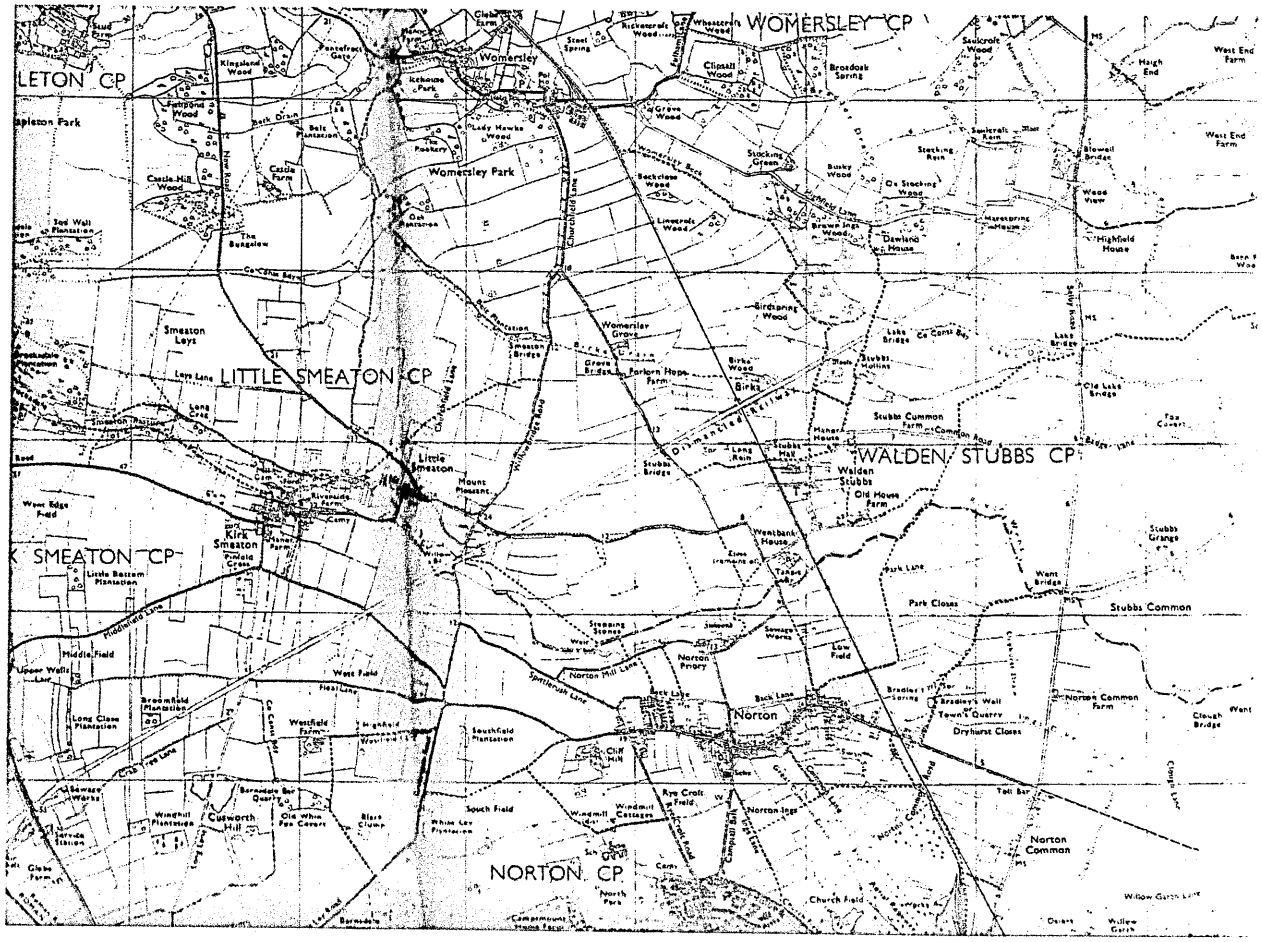


Figure 2.9 – Map of South Kirkby, Badsworth, Upton and Thorpe Audlin

Figures 2.3- 2.7 are from the 2nd edition, 6 inch Ordnance Survey maps of 1907 and viewed together give a good impression of the relationship of the various townships to one another.

3
EVALUATION OF SOURCES AND METHODS

The main aim of this research is to discover the reasons for the eventual decline in infant mortality in Hemsworth, which did not begin until 1905. In order to understand the reasons for the decline it is firstly essential to examine the reasons why the IMR remained so high, and in fact increased during the late 1880s and 1890s in Hemsworth district. A major sub-aim must therefore be to thoroughly research the reasons for the high IMR there and this chapter will therefore examine the various primary sources available to carry out this research and the different methodological approaches required by them.

The records which survive for Hemsworth Union are nearly all of the "official" type or relatively recently published local histories, the latter dealing primarily with the coal mining industry. They comprise:

- Vaccination Officers' Register of Births - for the whole of South Kirkby and the agricultural villages from 1871 through to 1911 with the exception of the 'missing registers' as discussed below.
- Vaccination Officers' Report Books for 1871 to 1911.
- Parish Registers of Births and Deaths for the Parishes of South Kirkby, Kirk Smeaton,
- Cemetery Records (Moorthorpe Cemetery 1907-1912)
- Medical Officer of Health Reports
- Sanitary Survey of Hemsworth (1923)
- Minutes of Hemsworth Rural Sanitary Authority (1872-1894)
- Minutes of Sanitary Committee of Hemsworth Rural District Council (1895-1911)
- Maps (Ordnance Survey 6" series)
- Other sources (local histories, etc)

3.1 Vaccination Birth Registers and Vaccination Officer Report Books

- **Vaccination Registers**

The main sources used in this study are the infant Vaccination Registers of Births. When compulsory vaccination against small-pox was introduced in 1871 all districts had to establish a sanitary authority, appoint a medical officer of health, inspector of nuisances and vaccination officer and keep accurate records of all births for the purpose of recording the vaccinations. Thus the vaccination registers record the child's date of birth, name, address and when, or whether, the vaccination was administered.

As explained in Chapter 2, p 70, the Vaccination Officer for Hemsworth registration district was Francis Burkitt, who was also the Registrar for births, marriages and deaths. He attended some of the different townships at certain times each week in order to fulfil his duties as both Vaccination Officer and Registrar. He also had an office in Hemsworth where the public could register births, marriages and deaths. The information provided by the parent when registering a birth would be used to complete both the civil register and the vaccination register simultaneously thus ensuring that all infants whose births were registered were also included in the vaccination register. Thus, we can be certain that the vaccination registers provide a record of all live births in the Hemsworth registration district. These registers therefore form a very valuable resource in that they duplicate much of the information found in the civil birth registers which are not accessible to the public in England and Wales. The vaccination registers therefore record all infants born (in the areas where the registers survive) during the period of compulsory vaccination against small pox which commenced in 1871 following the Vaccination Act of that year. The registers used here cover the period from the autumn of 1871 to the autumn of 1911 (they actually continue until 1948). Just a few volumes are missing - the first of these covers much of 1897, the second one 1901 and for the third 1903-04. In 1907 Hemsworth was split into two districts, east and west. The registers survive for the eastern district which includes South Kirkby, South Elmsall and most of the agricultural villages. Included in the western district are Hemsworth, Ackworth and Grimethorpe. In 1923 the district was divided into three with Grimethorpe with the towns and villages surrounding it forming a southern district. The final volume for the entire district covers 1905-06. As the entries are very sparse one must assume it does not provide a complete record. As the first volume for the eastern district starts part way through 1907 there is then a considerable gap there between the last of the registers covering the whole district in 1906 and the start of the new eastern one in 1907.

The first volume, which starts at entry number 497, goes through to number 500, then recommences at number 1 and ends at number 496. Subsequent volumes start with entry number 1 and in the majority contain 500 birth entries. There is no break at the start of a new year.

Figure 3.1 – Example of entries in Vaccination Birth and Death Registers

RETURN of all BIRTHS registered during the Month of August in the Sub-District of Loughborough Union (Parish) District within the District of Mr. Moore Vaccination Officer, made under 34 and 35 Vict. c.98 s.8

NOTE. *The Cols in Divisions I and II of this form are to be filled up by the Registrar; those in Division III to V. are to be filled up by the Vaccination Officer. Provision is made in Div II. for The Registrar's Minute, showing the date of giving the Notice, and to whom given.*

Register Kept by Vaccination Officer

I Extract from the Register Book of Births relating to each Child							II Minutes of Notice given pursuant to 30 and 31 Vic. c.84 s.25		III Register of Certificates			IV Date of death in case of child being dead before vaccination	V Reference to consecutive number in the Officer's Report Book in cases transferred thereto
No in Birth Register	When born	Where born	Name, if any, of child	Sex	Name and Surname of the Father, or (if the child be illegitimate) of the Mother	Rank, Occupation or Profession of Parent	When given	To whom given	Date of medical certificate of *successful* Vaccination	Date of Certificate of *Insusceptibility* or of having had *Small Pox* (Enter 'Ins' or 'S.P.' as case may be	Name of the Medical Man by whom the certificate is signed		
1	2	3	4	5	6	7	8	9	10	11	12	13	14
493	8 Aug	Wellington St.	Matthew Henry Joseph	m	Frank North	FWK	28 Aug	Father	1888 Nov 19	–	J. Coverdale		

THERE ARE FIVE ENTRIES LIKE THIS ON EACH PAGE

RETURN OF DEATHS of Infants under Twelve Months of age Registered during the Month of Dec. 1888 in the Sub-District of Loughborough within the District of Mr Moore Vaccination Officer, made under 34 and 35 Vic., c.98, s.8.

Extracts from the Register Book of Deaths relating to each Child

No in Death Register	When Died	Where Died	Name and Surname of Infant	Sex	Age	Name and Surname of the Father or (if the child is illegitimate) of the Mother	Rank Occupation or Profession of parent	No. in Birth Register if registered in this sub-district and the Register is in possession of the Registrar	REMARKS
1	2	3	4	5	6	7	8	9	10
358	26 Dec	Fox and Hound Yard	Matthew Henry Joseph North	m	4 ms	Frank North	FWK	493	Vac

THERE ARE FIVE ENTRIES LIKE THIS ON EACH PAGE

Source: Michael Drake handout

The registers consist of a number of columns. Starting from the left, one has the entry number, date of birth, place of birth, child's names, sex, father's name or in the case of an illegitimate birth, the mother's name, parent's occupation (father's in the case of legitimate children, mother's in the case of the illegitimate), then various other columns including when and to whom notice to vaccinate was given, date of successful vaccination, or alternatively date of "Certificate of Insusceptibility", Certificate of conscientious objection (after 1898), or date of death if this occurs prior to vaccination. Finally there is a column for the reference number in the Vaccination Officer's report book for those cases where vaccination was delayed for some reason. As well as the Vaccination Registers of Birth there are also Vaccination Registers of Infant Deaths which were used to record all infant deaths whether they had been vaccinated or not. These have not survived for the Hemsworth District, presumably because the decision was made at some time in the past that they were not a particularly valuable resource.

Conscientious objection to compulsory vaccination began amongst the artisan and skilled working classes. It was not until after 1907 that this movement spread to the mining communities in the Hemsworth district. Even when a Certificate of Conscientious Objection (after 1898) was issued the Vaccination Register was completed in exactly the same way; family reconstitution and nominal record linkage is therefore still possible using these entries.

These registers thus provide a wealth of data and information, both explicit and implicit, which is of use for our project. For example, because the registers give place of birth, it is possible to build up a picture of streets or areas which suffered the greatest number of infant deaths. It should be borne in mind that due to the lack of infant death registers only those deaths which occurred prior to vaccination are entered in the birth registers. However, it would appear that as far as Hemsworth was concerned, well over 60 per cent of infant deaths took place prior to vaccination. (In fact, as far as South Kirkby was concerned 80 per cent of infant deaths over the whole period took place before vaccination and in the agricultural villages the figure was 88 per cent). Using the information on parental occupations it is also possible to undertake a detailed comparison of death rates in different occupational and/or social groups, although some occupations are difficult to place within a specific social group. However, in the case of South Kirkby this is less of a problem due to the fact that, apart from a few tradesmen, by 1901 almost all males there earned their living in coal mining.

The date of vaccination is recorded as well as that of birth so it is relatively simple to work out whether the gap between them varied over the years and/or according to occupation. As the sex of the baby is also given in the register it is easy to compare the numbers of births and infant deaths by sex. Where the baby did die before vaccination then, as the date of death is given one can work out ages at death and again make comparisons between deaths at different times of the year For example, a large number of deaths in the third quarter (i.e. July, August, September) could well indicate the impact of summer diarrhoea. The vaccination registers allow this to be analysed according to the occupation of the victim's father, and across different townships and areas within the Registration District.

The detailed demographic data which the Vaccination Registers provide means that they form a very valuable source. Without them, much of the detailed analysis of this thesis would not have been possible. They are, in fact, unrivalled for the purpose of studying infant mortality at micro-level *(Drake 2005: 52).*

- **Vaccination Report Books**

Where vaccination did not take place within a certain number of weeks from birth (the length of time seemed to vary over the years) then it was the duty of the vaccination officer to trace the infant and record the reasons for the omission in his Vaccination Report Book. The usual reason was that the family had moved away, although occasionally vaccination was delayed because the infant was unwell. For those infants who were particularly frail there may be a number of entries until, as was often the case, the child died unvaccinated. The entries were cross referenced to the Vaccination Birth Registers and a note of this is made in each case. These report books have been used in conjunction with the Vaccination Register of Births and are thus very useful in following up a significant proportion of the infants who are 'missing' after birth in the Vaccination Register.

All the births listed for addresses in South Kirkby as well as for the agricultural villages have been extracted, i.e. dates of vaccination and/or date of death noted. Father's name, address and occupation have also been used in order to link all the births to the same parents. This nominal record linkage exercise has been checked against the entries in the Parish registers of baptisms and burials.

As with all primary sources the Vaccination Registers suffer from some drawbacks. We cannot, for instance, always be certain that the information given in them is accurate. For example, particularly in the first half of this period (i.e. 1871-1891) many of the lower classes, particularly women and girls, were still illiterate or only semi-literate and so they could not check the accuracy of the names they presented to the Vaccination Officer orally. As a result the pronunciation of names, addresses, etc. was open to interpretation by the Vaccination Officer or his clerk who recorded them. One example of this is that of a coal miner who gave his name as Orris Webster *(Hemsworth Vaccination Register of Births BG/3/9/2/31)*. This seemed to be an unusual first name and appeared in two entries of birth in the column for father's name. However, a further entry at the same address gives the father's name as Horace Webster *(Hemsworth Vaccination Register of Births BG3/9/34)*. Such errors are of greater significance when they involve the surname as this makes it more difficult to group correctly all the children of a particular family.

3.2 Parish Registers of Baptisms and Burials

The Parish registers of baptisms and burials of South Kirkby, Kirk Smeaton, Little Smeaton, Skelbrook and Womersley have been used in this study. The last mentioned parish is in the neighbouring registration district, but as a number of the infants from Stubbs Walden and

Little Smeaton (both in the Hemsworth district) were baptised there it has been drawn upon to complete the record. The register of burials is useful if searching for the deaths of any babies who died after vaccination but before their first birthday as age is given in them. The baptism registers have only been used for the purposes of family reconstitution as in most case the date of birth is not given. This can only be ascertained if the infant subsequently died when age at death is given; it is impossible to know whether the baptism is that of a young infant or an older child. Although most infants appear to have been baptised at around 2-6 weeks of age during the period in question there are a number of cases of families baptising a number of children of different ages at the same time. As it was necessary to calculate the IMR for the individual townships using information from the parish burial registers it was necessary to assess these for the quality of information. This was done by checking the infant deaths known to have occurred from the Vaccination Registers with the parish register of burials. For the period checked (1880s) it was found that 93 per cent of those deaths which were in the Vaccination Registers were found in the parish register of burials. 80 per cent of the deaths not found were those of infants aged four days or less. The same method was used to ascertain the average lapse of time from death to burial. It was found that the mean length of time during the 1880s was 3 days and this was the figure used when calculating age at death for those infants who died after vaccination and whose deaths could therefore only be traced in the parish registers.

The Parish Registers are also very useful in helping to confirm the details in the Vaccination Registers. For example, a family may move house many times and therefore the Parish Registers can be used to confirm that the names of both parents are the same for two or more entries in the Vaccination Registers.

While recognising some of the drawbacks of the parish registers without access to them much of the information in this thesis would have been far less complete. Indeed, when attempting a micro-study such as that in Chapter 6, they form an essential primary source and tool.

3.3 Cemetery Records

The present Parish Church in South Kirkby dates from the fifteenth century. Its churchyard was quite big enough for a relatively static rural community, but with the explosion in population that took place there from the 1880s onwards this was no longer the case and a municipal cemetery was therefore opened in Moorthorpe. This lies roughly midway between South Kirkby and South Elmsall and is within the parish and enumeration district of South

Kirkby.. Excellent records are available and, like the parish burial registers, they give precise age at death, although not the exact date of death or the precise address of the deceased. However, they do list the burials of stillborn infants and this enables us to calculate the ratios of infant deaths to stillbirths or neonatal deaths to still births over a four year period.
The following are example of entries in the cemetery records:

		Date of burial
No	Stillborn child female child of George Turgoose – South Kirkby	12.07.1909
"	Stillborn male & female child of John Allan – South Kirkby	12.07.1909
"	Thomas Perry aged 8 months – South Kirkby	06.08.1901

These records proved to be invaluable when conducting the micro-study which is the subject of chapter 6.

3.4 Medical Officer of Health Reports

The Medical Officer of Health reports, both for Hemsworth district and the West Riding of Yorkshire, have been used in this study. However, those for the whole of the West Riding do not provide much useful information as they had to cover a huge area, incorporating the textile towns of Leeds, Bradford, etc; the steel and engineering towns of the Sheffield area (part of the West Riding until local government reorganisation of 1974) and the very rural and remote regions of the Yorkshire Dales. The reports of the West Riding have provided some background information on such matters as weather conditions which have proved useful and they have also been used to compare different districts (with different industries and economies) to Hemsworth. The West Riding reports cover the whole of the period, whilst many of the Hemsworth reports that are held in the West Riding Archives have been damaged. However, those for the years 1888-92 have survived relatively intact. This is the case too with those for the 1870s which are contained in the reports of the meetings of Hemsworth Sanitary Authority. Further reports from the 1890s and 1900s are held at the Wellcome Foundation and have also been used. Until the 1890s the reports do not give a great deal of information on infant mortality apart from stating the actual IMR for each year and for previous years Then they begin to include a breakdown of causes of infant deaths. Prior to this, causes of death for those under five years are usually given. These reports do provide a great deal of detail, including times and places of outbreaks of infectious diseases which are likely to have some effect on infant mortality and can be cross referenced with the vaccination register to see whether or not there was a rise in the number of infant deaths at these particular dates. They also give details of matters of particular concern to the MoH,

especially such sanitary matters such as the lack of an adequate water supply, poor sewerage, inadequate toilet facilities and defective drainage. The Hemsworth reports are usually only 6-8 pages of A5 size in length. They have been used, amongst other things, to ascertain whether any outbreaks of infectious diseases reported by the MoH coincided with clusters of infant deaths in the Vaccination Registers or Parish Registers.

They have also been used to check the IMR for the whole of the district for each year, as well as causes of death in children under 5 years and under 12 months when given. However, these figures are not always particularly helpful as a large proportion of deaths are assigned to "other causes". Perhaps the most important information ascertained from these reports has been the comments of the MoH as to the water supply, sewerage and general environmental conditions of the district.

These MoH reports proved particularly valuable in providing information on the relationship between the MoHs and the sanitary authority and sanitary committee of the rural district council. Similarly they provide us with an insight into the workings of local government during the period.

3.5 Sanitary Survey

Another valuable source has been a Sanitary Survey of Hemsworth District published in 1923 but covering the decade 1911 to 1921. This was part of a series published by the West Riding County Council in the first three decades of the century. For each township it gives the number, condition and age of the houses, type of water supply and sewerage system, types of toilets, and other information such as whether overcrowding existed. It also includes information on all schools in the district, milk suppliers, slaughterhouses, nuisances and percentage of those vaccinated. This is a useful source despite the fact that it only covers the very end of the period in question. However, with regard to housing, sewerage and water supply, conditions are unlikely to have been any better prior to the period covered by the survey. For instance this survey cites Dr Wiltshire's annual report of 1921 (the MoH for Hemsworth from 1907):

> ...privy middens predominate. They affect injuriously infant mortality and the Incidence of enteric fever by encouraging flies.

This survey can then be used to make useful comparisons between the housing conditions in the various townships that made up Hemsworth District which, in turn, can be related to the socio-demographic information obtained from the vaccination registers. However, as

previously mentioned this source relates only to the end of the period concerned, and this is the major weakness of it for our purposes.

3.6 Minutes of the Hemsworth Rural Sanitary Authority

The Minutes of the meetings of Hemsworth Rural District Sanitary Authority have also been used. These are in two volumes, one covering the period 1872 to 1884 and the other 1884 to 1894. They begin with the establishment of the Sanitary Authority in 1872 and continue until it was superseded by the Rural District Council in 1895. In both volumes the minutes are much more detailed and the reports of the MoH more thorough towards the beginning of the period. Thus their value declines the further one proceeds through each volume. Initially the Minutes gave details of letters written to the Authority on matters such as nuisances, poor water supply etc., as well as MoH reports regarding, for example, outbreaks of "fevers", measles etc. They also provided accounts of some visits made by the MoH and Inspector of Nuisances. For example, there is an account of their visit to the railway huts at Kirk Smeaton in the summer of 1875 - the MoH describes them as being seriously overcrowded. The main weakness of these minutes as a source is the inconsistency in the amount of detail given, most of the later ones being very brief indeed, merely stating persons attending each meeting with an outline of the topics of discussion. Parts of the volumes have also been badly affected by damp. The minutes finish in 1894 prior to the Rural District Council taking on the responsibility for local government in 1895.

3.7 Minutes of Sanitary Committee of Hemsworth Rural District Council

These start at the date of the first meeting of the committee in January 1895. This is a very useful source, particularly as the minutes are more detailed than those of the Sanitary Authority and give much information on local affairs. The level of detail in them is provided by the case of young boys (aged 10-14) who were all inhabitants of Faith Street and who were fined threepence each for breaking down the fencing which separated the sewage works from the land at the end of Faith Street as well as causing other damage (chapter 6). Like the minutes of the Sanitary Authority, this source also gave details of complaints with respect to "nuisances". These were often caused by householders keeping poultry and pigs in close proximity to other housing (as well as their own) They also gave a considerable amount of detail of discussions on how best to obtain a reliable and clean water supply for the various townships of the Hemsworth Union as well as concerns about sewerage and scavenging. In part some of the minutes are duplicated by the MoH reports.

Although obstensibly factual, it should be borne in mind that these minutes also reflect to some extent the opinions of the committee members and their clerk. As with many of the other official Hemsworth records these minutes have at some time in the past been damaged by water or damp leaving considerable sections illegible.

Despite the drawbacks described, the minutes of both the Rural Sanitary Authority and the Sanitary Committee of the Rural District Council have been very valuable sources of information at the local level.

3.8 Maps

There is a wide range of maps available covering the whole of Hemsworth District both in the Ordnance Survey 6" and 25" series. The 6" maps are those of the second edition of the Ordnance Survey published around 1905-7. There are also first editions from around 1850 and later ones from the 1920s and 30s. They are all useful as they show how development took place over the period. They also show some street names which allows one to pinpoint areas with particularly high numbers of infant deaths and also to see the proximity of such areas to coal mines, brickworks, quarries, railways etc. There are also Geological Survey of Great Britain maps for the whole of the district. However, as the data for Hemsworth does not appear to indicate that the differences in the IMR of the various townships is connected to soil type, geological maps have not been used.

3.9 Census Enumerators Books and Census Report Books.

The Census Enumerators' Books (CEBs) for 1871, 1881, 1891 and 1901 enable one to discover the size of each family and the number of people who are living in each household. This is particularly useful as it facilitates calculation of family size and the spacing of births which may be important factors in the determination of infant mortality rates. Moreover, overcrowding can be estimated from both the 1891 and 1901 censuses as both give the numbers of rooms in a house where there were fewer than five. Unfortunately, this section was not always completed by all house-holders with fewer than five rooms so it is not always safe to assume that the house has five or more rooms when there was no entry to the contrary.

As with all sources, the CEBs need to be subject to close scrutiny, preferably by cross referencing with other sources. For example, instances have been found of children listed in the CEBs as having been born in, say, Barnsley, when their birth was actually registered in South Kirkby *(CEB for South Kirkby – reel 4308 and Vaccination Register BG3/9/36 - 129).*

Another common inaccuracy is that of age. Many householders listed the ages of their children as they would be on their birthday in the year of enumeration, thus sometimes inflating ages of children by a number of months. For example, in the 1901 census which took place at the end of March a child may be listed as 10 years old, but cross-checking with the vaccination registers reveals that this particular child was not born until July 1891. One example of this is the family of Clifford Hulley, a coal miner living in Moorthorpe. According to the 1901 census return his children included three sons, Ernest aged 9, Herbert aged 7 and Harold aged 2 *(1901 CEB for South Kirkby – reel 4308)*. However, according to the Vaccination Register of Births, Ernest was born in November 1892, Herbert in September 1894 and Harold in June 1899 making them 8 years 4 months, 6 years 6 months and 1 year 9 months respectively at the time of the 1901 census *(BG3/9/30 - 77, BG3/9/32 – 177, BG3/9/36 – 175)*. Their ages are thus overstated by at least 8 months, 6 months and 3 months respectively.

There were also two other columns prior to the name, one for the address (where there was a specific address and not just 'cottage' in Badsworth) and the other, in the 1891 and 1901 CEBs, for the number of rooms in the dwelling where there were fewer than five rooms.

The CEBs have been an absolutely essential source for this thesis, particularly for the micro-study contained in chapter 6, which could not have been undertaken without them.

The Census Report Books for the years 1801 to 1911 have also been used. These contain the statistical data gathered from the census, usually in tabular form, and are published within a few years of the census date. For example, as the number of males and females for each township within a registration district is given, it is possible to observe the rise or fall in population over the years. From 1861 onwards the population of the entire registration district is also broken down into age groups; it is thus a straightforward matter to observe any changes in the age profile of the population. The reports also contain information on such matters as occupation, and the number of dwellings that were occupied, unoccupied or under construction in each enumeration district.

Table 3.1 - Example of households in 1901 Census

Name	Relationship to Head of household	Sex	Marital Status	Age	Occupation	Birth-place
Alfred Wootton	Head	M	M	30	Coal Miner	Hoyland, Yorks
Sarah Wootton	Wife	F	M	28		Barnsley, Yorks
Herbert Wootton	Son	M		11		Leeds
David Wootton	Son	M		9		Moreton, Yorks
Geo N Wootton	Son	M		8		Moreton, Yorks
Eliza Wootton	Daughter	F		5		Moreton, Yorks
Harry Wootton	Son	M		3		Wakefield
John Wootton	Son	M		3 mths		South Kirkby
John Beverley	Head	M	M	32	Coal Miner	Barnsley, Yorks
Hannah Beverley	Wife	F	M	28		New Jersey, USA
Harry Beverley	Son	M		11		Barnsley, Yorks
Arthur Beverley	Son	M		9		Barnsley, Yorks
Lilly Beverley	Daughter	F		6		Barnsley, Yorks
Walter Beverley	Son	M		5 mths		South Kirkby

Source: 1901 Census Enumerators Books for South Kirkby

Table 3.1 shows an example of two households from the 1901 census (with the first two columns omitted).

3.10 Other Miscellaneous Sources

There are a number of other sources mainly unofficial and unreferenced which have been used. These include:

- Publications (book and pamphlets).
- Trade Directories
- Newspaper cuttings and photographs (unreferenced) in Wakefield Archives and at South Kirkby Public Library. Newpapers on micro-film in Wakefield Central Library.

There exist too a few publications dealing in particular, with the rise and fall of the coal mining industry in South Kirkby and South Elmsall. Many of these give first hand accounts of domestic life and social conditions in the towns. However, all such accounts need to be

treated with some caution as people's memories are often selective and frequently coloured by more recent events.

One particularly useful source is a book by A Wilkinson *(Wilkinson 1976: Wakefield)* on the history of South Kirkby. He moved into South Kirkby from neighbouring South Elmsall as a young boy. His father was a miner who lost his job following a strike at Frickley colliery but who found work in the South Kirkby colliery. The book covers both the recent history of the town, its the manorial history, its landowners and its church. However, this slim volume is the only history of South Kirkby available apart from the brief summaries contained in trade directories and county histories. Even less has been written about the agricultural villages. The paucity of local histories contrasts sharply with the many books that have been written on the history, daily lives and living conditions of the working population of large Victorian cities such as Sheffield *(Dodgson 1998)* and the Fulham sub-district of London *(Smith 1998).* Sheffield Park district was, like South Kirkby, primarily a coal mining community.

Other sources used for background information on the district have included trade directories which also list the influential people in each town or parish. These directories appear to dwell on the agricultural economy of the parishes rather than the emerging industries, such as coal mining in South Kirkby.

Another useful source to be found in the Wakefield Archives is a file containing newspaper cuttings on a number of health issues in the Hemsworth district. Although in matters of opinion one needs to treat these papers with caution, where they do report the activities of local officials and committees they can provide a useful addition to the other sources available. For example, these newspaper cuttings generally cover Medical Officer of Health Annual Reports as well as local enquiries into health and sanitary matters such as the one involving the new building bye-laws proposed for the Hemsworth District. (reported in the Wakefield Express, 23 November 1907) Others contained council reports dealing with health and sanitary issues, e.g. on 17 September 1910 the Wakefield Express carried a report on overcrowding in the Hemsworth District. There are also some of the local newspapers, e.g. Wakefield Express, available on microfilm in Wakefield Central Library.

Unlike many of the growing provincial cities such as Leeds, Manchester and Sheffield, Hemsworth did not have a large middle-class. Not surprisingly, therefore there are no record of "ladies committees" such as those which are often found in large cities; committees which concerned themselves with trying to improve the lives of the poorer mothers and families by

offering both practical assistance and health education, etc. The level of bureaucracy in South Kirkby and the agricultural villages of the Hemsworth district, and thus the number of written primary sources available, was also at a much more modest level than what was to be found in the big Victorian cities, particularly London. In both regards this area remained very much a 'backwater' in the otherwise booming Victorian economy despite its rapidly expanding coal industry which helped to fuel that economy.

3.11 Methods

In order to investigate the changes that took place within Hemsworth which were associated with the growth of coal mining, it was decided to examine the births and infant deaths covering the whole of the period 1871 to 1911. However, the numbers involved for the whole of the Registration District were too great to handle and it was decided to look in detail at one of the townships which grew from being a large village into a medium sized colliery town. The three largest of these were South Kirkby, South Elmsall and Grimethorpe. Grimethorpe had to be ruled out as vaccination registers for the Hemsworth Western District, into which Grimethorpe fell between 1907 and 1930, were not available and these were one of the principal tools in tracing the births and infant deaths. Of the two remaining townships, South Elmsall did not experience quite the same rapid rate of growth in the population growth until the very end of the nineteeth century when Frickley pit was sunk and expanded. South Kirkby, on the other hand, showed rapid growth from a much earlier date and was therefore selected.

It was then decided to compare South Kirkby with those parishes/townships which remained purely agricultural after the development of the coalfield. The villages selected were those which the Hemsworth Sanitary Survey of 1921 referred to as purely agricultural. These were Thorpe Audlin, Upton, Kirk Smeaton, Little Smeaton, Stubbs Walden, Skelbrooke, West Hardwick and Hamphall Stubbs. It was also decided to include the townships of Wintersett, Wragby and Hessle and Hill Top as, although some mining activity had taken place there prior to the sinking of the deeper pits and there were still a few miners living there, they remained largely agricultural. All these villages, with the exception of Wragby, Hessle and Hill Top and Wintersett which were on the western fringes of the coalfield, were on the eastern side of Hemsworth District.

All the entries for the townships selected were transcribed and recorded exactly as they appear in the Vaccination Registers using Microsoft Excel which facilitates calculations and

production of tables and graphs. Microsoft Excel enables data to be sorted in a number of ways, for example, in date order or in alphabetical order (of surnames). This facility was extremely useful in completing family reconstitution for this thesis, particularly as this study involved the recording and fairly close examination of 4,422 births and 574 related infant deaths.

The Parish Burial Registers were then used to trace any infant deaths which occurred after vaccination, and here again, the provision of addresses in the Vaccination Registers was vital in the cross referencing process.

The entire 1901 census for South Kirkby was transcribed and cross referenced to the names from the Vaccination Registers. This enabled more complete family reconstitution for those families who had children born in other parts of the country before moving to South Kirkby. The entire 1871 and 1891 census returns for South Kirkby were also used. The entire 1891 census returns for the agricultural townships were transcribed as were those from five selected townships for 1901. These were also used for family reconstitution purposes. They also enabled the comparison of mobility between the colliery community and the agricultural communities.

- **Calculating the IMR**

Parish Burial Registers have been used to find any infant deaths which occurred after vaccination and were therefore not usually included in the vaccination register of births. In order to check on the completeness of the burial records a survey of the Vaccination Birth Register was carried out to locate those infants known to have died prior to vaccination from the Vaccination Birth Register. It was found that approximately 95 per cent of the infant deaths appearing in the Vaccination Birth Register were also in the parish burial register. It is therefore assumed that those infant deaths in the Burial Register of infants dying after vaccination, and whose deaths do not appear in the Vaccination Register, also represent approximately 95 per cent of these infant deaths. Looking in detail at 674 births (from the vaccination registers) between February 1896 and 1904), 130 of the infants died before their first birthday and 116 (90 per cent) of these births were also recorded in the Parish Register of Burials as well as in the Vaccination Register of Births. Those infants not included in the Burial Register were usually 7 days of age or under at the time of death.

- **Calculation of Infant Mortality**

Because of the necessity of relying on Parish Burial Registers as well as cemetery records (from 1907 onwards), the IMR may be understated, particularly in the agricultural townships where burial did not always appear to take place in the parish of residence. The chi square test was therefore carried out on the figures for the overall IMRs for the whole period 1872-1910 for South Kirkby and the agricultural townships. Despite any problems involved with the data from the parish registers, it would appear that the difference between the overall infant mortality in South Kirkby and the agricultural townships was statistically significant. However, due to the relatively small data set which facilitates simple cross-linkage between Vaccination Birth Registers and Parish Registers it was not felt necessary to use this test at the individual township level or for shorter periods.

Table 3.2: Test for significance in difference of total IMRs for South Kirkby and the agricultural townships 1872-1910

	Calculated IMR 1 – South Kirkby	Calculated IMR 2 – Agricultural Townships
Infant Mortality Rate	153	96
Number of Births +	2624	1798
Calculation		
P	0.153	0.096
Q	0.847	0.904
St.devn.	0.009882	
Z	5.768067	
p-value	1	
At 5% cutoff	Difference IS significant	

Source: Registrar General's Quarterly returns, Vaccination Registers for Hemsworth district, Parish Burial Registers and Cemetery records.

The problems inherent in using parish registers for use in calculation of mortality rates has been widely debated by those involved in the study of mortality, both infant and early childhood. Galley, Williams and Woods state that:

> Secure conclusions will be shaken not because of new concepts or methods, but merely because the empirical foundations will have been found wanting in an age of data processing and re-evaluation...(*Galley, Williams & Woods 1995: 16)*

There are also problems concerning stillbirths, for evidence suggests that some infants who were alive at birth have been recorded and buried as stillbirths since such a burial was cheaper and this was an important factor for working class/poor families. Likewise, anecdotal evidence suggests that stillborn infants have been baptised and buried as infants who were alive at birth. Once the graveyard of the parish church in South Kirkby became full in 1907 a new municipal cemetery was consecrated at Moorthorpe and an examination of the records reveals that between 1907 and 1912 a total of 280 infants (including stillborn babies) under the age of 12 months were buried there. Of these 98, or 35 per cent, were stillbirths, suggesting that perinatal mortality may have been higher than the figures for infant deaths suggest. Of these 98 stillbirths 40 were born to single mothers, suggesting that the illegitimacy rate may well have been higher had these infants been alive at birth. After 1907 there were very few burials at all recorded in the parish register and it is therefore assumed that most burials took place in the new municipal cemetery. Both Hart *(Hart 1998: 215)* and Wrigley *(Wrigley 1998: 440)* assert that maternal health and nutrition were of crucial importance in the still-birth rate and the implications of these figures will be examined in more detail in Chapter 5. The address is not given in the cemetery record for the burials of those infants who were stillborn and it is therefore possible that some single mothers from outside South Kirkby chose to bury their stillborn infants at Moorthorpe rather than in the churchyard of their own township. This would obviously inflate the proportions of both stillbirths and illegitimate births.

There are a number of ways of measuring infant mortality, but the most common method used by demographers for calculating IMR is the period method which involves the use of aggregate numbers of births and deaths for each year. The problem with this method is that not all deaths in a year are drawn from the births recorded in the same year. For example, not all the infant deaths occurring in 1900 will relate to births in that year; some of them will relate to infants born in 1899. However, the method used here is the cohort IMR which is more accurate in that cohort calculations relate to one age group and one birth cohort. Deaths are related directly to the group of births from which they originated. For this type of study it is essential that infant deaths can be accurately matched with births and this is possible because the Vaccination Registers provide us with the names and addresses of the infants which can be linked, where necessary, with burials in the parish registers. A micro study such as this one is therefore well suited to this type of calculation. Life tables as in Table 3.3 have also been used to test the accuracy of the figures, but it is felt that this is not really necessary due to the relatively small data set. Infant deaths have been calculated using both the vaccination and parish registers. Those infants who appear to "leave" prior to

either vaccination or notification of death are discounted as are those deaths in the parish registers which cannot be matched to a birth in South Kirkby.

Column 1 of the life-table (as in Table 3.3) shows the age of the infants in days. Columns 2 to 4 give the number of losses (i.e. those infants no longer at risk through death or leaving the area). Column 2 shows the number of deaths pertaining to infants in each age group. Column 3 gives the number of infants vaccinated within each age group. Column 4 gives the number of infants who moved out of the distract. Column 5 shows the number of infants who have moved into the area and column 6 gives the result figure for the number of infants at risk of death.

Table 3.3 – Infant Mortality Rate and Life Table

	Births					**Life-Table**			
	Losses			**Gains**		**Mortality**	**Survivors**	**Deaths**	**Cum Deaths**
(1) Age in days	(2) Deaths	(3) Vaccinated	(4) Went out	(5) Came in	(6) At risk	(7) q(x)	(8) 1(x)	(9) d(x)	(10) cum d(x)
0-30 31-60 61-90 91-120 121-180 181-365 366+									
Total									
Aggregate based Infant Mortality						Individual based Infant Mortality			

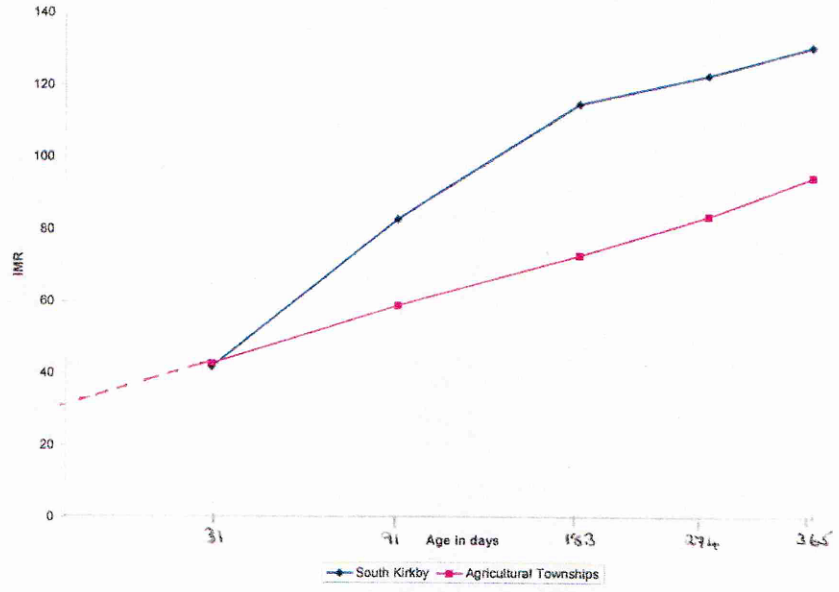
However, as there are no Vaccination Death Registers for the Hemsworth District simple calculations of IMR are not affected by those migrating into the area. These deaths would only show up in the Parish Register and, as they do not match a birth, are ignored. It was found that the cohort method for calculating the IMR is the most appropriate for working with the relatively small numbers as this always matches a death with a birth.

- **Biometric Analysis**

Biometric analysis was developed by Bourgeois-Pichat in the 1950s and is a means of separating infant mortality into its endogenous and exogenous components. Endogenous infant mortality almost always occurs within the first month of life and is attributable to causes such as birth trauma, congenital defects or premature birth which originate at birth or during

the ante-natal period. Exogenous mortality, on the other hand, usually has environmental causes, deaths being due, for example, to disease, poor hygiene or inadequate nutrition. Bourgeois-Pichat's method is based on his discovery that where age at death is expressed as the function $\log^3 (n+1)$, where n is age in days since birth, the cumulative total of deaths between the end of the first month and the end of the twelfth are linearly related to age. The resulting straight line can then be extrapolated to age zero to achieve an estimate of endogenous mortality without any need for knowing the cause of death of the individuals. For example Figure 3.1 shows that the total IMR at 31 days for the agricultural townships was 43. When the straight line is extrapolated to age zero it intersects the y axis at 32, this being the level of endogenous mortality (Figure 3.1).

Figure 3.2 – Biometric Analysis of Infant Mortality in South Kirkby and agricultural townships 1871-1911



Source: Vaccination Birth Registers for Hemsworth and appropriate Parish Registers.

Although this method of biometric analysis usually gives a straight line, this is not always the case *(Galley and Woods 1999: 40) Figure* 3.2 gives an almost exactly straight line for the agricultural townships. However, this is not true in the case of South Kirkby which makes any attempt at extrapolation to produce the level of endogenous mortality very unreliable. Galley and Woods state that, although the Bourgeois-Pichat method is still a useful tool in calculating endogenous mortality, it does not always appear to give a straight line with all data, particularly that dating from the late nineteenth and early twentieth centuries *(Galley and Woods 1999: 40).*

However, using the above analysis we can see that the IMR at one month in the agricultural townships was 43 and that exogenous mortality accounted for 11, leaving endogenous mortality at 32 per thousand live births.

Although it is extremely important for statistics to be as accurate as possible when undertaking any examination of infant mortality, as this thesis deals with a relatively small community it is the qualitative data which is often of more importance. This is particularly true when undertaking a micro-study such as that of Faith Street which is the subject of Chapter 6.

LINDA MARGARET DAVIES
B.A. (Hons) OPEN – 1995

THE CONQUEST OF INFANT MORTALITY: THE CASE OF HEMSWORTH 1871-1911

THESIS FOR D.PHIL

SOCIAL SCIENCE

SUBMITTED ON
30TH SEPTEMBER 2006

3

4

INFANT MORTALITY IN HEMSWORTH 1871-1911 WITH PARTICULAR REFERENCE TO SOUTH KIRKBY AND THE AGRICULTURAL VILLAGES

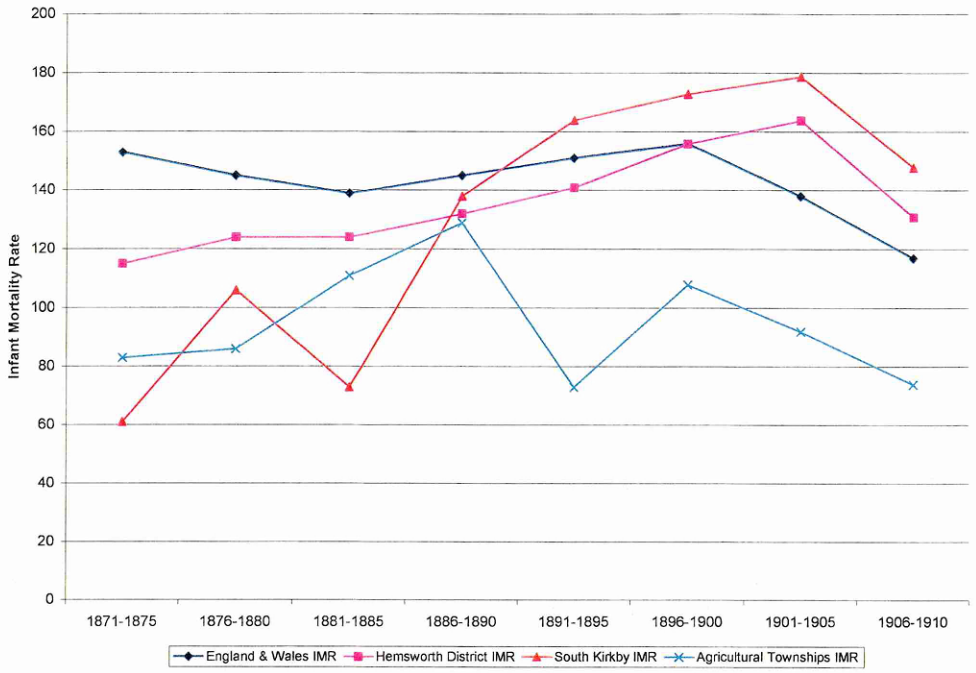
This chapter will examine the steady rise in infant mortality in the Hemsworth District from 1871 until 1905 and its slow decline thereafter. In particular it will analyse the rise in the IMR in the growing colliery township of South Kirkby; a rise that was in marked contrast to the steady rate in those townships which remained purely agricultural. In the latter the IMR remained lower than that for England and Wales throughout the whole period only increasing to over 100 between 1881-90 and 1896 to 1900. The chapter is arranged as follows:

1. A short history of infant mortality in Hemsworth as a whole.
2. Infant mortality in South Kirkby and the agricultural townships:
   - Introduction.
   - Factors which may have influenced infant mortality in South Kirkby and the Agricultural townships.
     - Twin and illegitimate births
     - Seasonality and Causes of Death
     - Demographic issues which may have an affect on infant mortality
   - Individual Families in South Kirkby and the agricultural townships
3. Medical Officers of Health in Hemsworth
4. Examination of Infant Mortality at selected locations in South Kirkby
5. Conclusion

4.1 Short History of Infant Mortality in Hemsworth and summary of relevant data

At the beginning of this period infant mortality in Hemsworth was low compared to that in the rest of England and Wales (Figure 4.1). South Kirkby and the agricultural townships had particularly low IMRs (although the number of births in South Kirkby at this time was very low, making statistically significant comparisons difficult). The IMR in Hemsworth Registration District remained lower than that for England & Wales until the period 1901-1905 when the IMR of the latter was beginning to fall. However, the IMR for South Kirkby at 164 became higher than that for England & Wales (151) during the first half of the 1890s and remained higher throughout the rest of the period. After a slight rise during the 1880s the IMR for the agricultural townships remained very low and even at its highest was well below that for the country as a whole.

Figure 4.1 – Infant Mortality in England & Wales, the Hemsworth registration district, South Kirkby and the agricultural townships 1871-1910



Source: Registrar General's Quarterly returns, Vaccination Registers for Hemsworth district, Parish Burial Registers and Cemetery records.
Note: The IMRs for England & Wales and the Hemsworth district and based on the number of births and infant deaths taking place in each calendar year. Those for South Kirkby and the agricultural townships are derived from the number of infants born in one calendar year and the deaths relating to those infants, some of which occurred in the following calendar year: the so-called cohort method.

Looking at the figures in more detail we see that for the period from 1872 (when Vaccination Registers were first kept) to 1875 the IMR in South Kirkby was only 61 per thousand live births. That for the same period in the agricultural townships was 83. For England and Wales in this period the IMR was 153 *(Quarterly returns of Registrar General)*. However, by 1895-1900 the IMR in South Kirkby had risen to 173. In the agricultural townships it was 108. Clearly a dramatic change had taken place in South Kirkby. The number of births in South Kirkby, as recorded in the Vaccination Birth Register rose from 49 for the period 1872-1875 to 449 for the period 1896-1900. This is probably a fifth lower than the actual number as the register containing most of the entries for the year 1897 is missing from the local archives. It would appear, therefore, that there was around a ten fold increase in the number of births in South Kirkby over the years between the early 1870s and the late 1890s. One might speculate that it is in this rise, and more particularly, in what it represented, that we might discover the explanation for the rise in the IMR that took place in South Kirkby over the same period.

Table 4.1 shows that there were 2,792 births in for South Kirkby according to the Hemsworth District Vaccination Birth Register from the beginning of 1872 to September 1911. Of these, 84 boys and 84 girls were either not vaccinated or did not die there. They have therefore been omitted from the calculation of the IMR in the area. Searches in the Vaccination Report Books lead me to believe that most had probably moved to another district and the Vaccination Officer has not been able to trace them. Some, however, may have died either whilst still in South Kirkby (with their burial not recorded in the Burial Register) or after moving to another district. The IMRs in table 4.2 have been calculated using the cohort method (see Chapter 3).

The total numbers of males and females born were almost exactly equal (1,397 boys as opposed to 1,395 girls). Of the 1,313 boys who can be accounted for after registration, 1,101 are known to have survived to their first birthday, as did 1,122 of the 1,311 girls. The only period when the IMR for females was higher than that for males was 1906 to 1910 at the time the IMR in South Kirkby was beginning to fall.

Table 4.1: Births and infants deaths in South Kirkby by sex over five year periods from 1872 to 1911.

	Births		Additional Births*		Infant Deaths		IMR		Total Births**	Total Infant deaths	Total IMR
	M	F	M	F	M	F	M	F			
1872-1875	21	28	1	-	2	1	95	36	49	3	61
1876-1880	46	39	1	-	5	4	109	103	85	9	106
1881-1885	60	64	2	4	7	2	117	31	124	9	73
1886-1890	140	114	12	9	20	15	143	132	254	35	138
1891-1895	189	176	6	9	33	26	175	148	365	59	162
1896-1900	194	221	14	20	37	36	191	163	415	73	173
1901-1905	216	213	16	19	43	34	199	160	429	77	176
1906-1910	392	392	22	20	55	61	140	156	784	116	148
1911	55	64	10	3	10	10	182	156	119	20	168
Total	1313	1311	84	84	212	189	161	144	2624	401	153

*These infants appeared in the Vaccination Birth Register but then there is no further record of either vaccination or death. They are not included in any of the calculations for IMR.
** These figures exclude the infants not accounted for after entry in the Vaccination Birth Register.
Source: Births – Vaccination Register of Births; Infant Deaths – Vaccination Register of Births, Parish Burial Registers and Cemetery records.

Table 4.2: Births and infants deaths in the agricultural townships of Hemsworth district by sex over five year periods from 1872 to 1911.

	Births		Additional Births*		Infant Deaths		IMR		Total Births**	Total Infant deaths	Total IMR
	M	F	M	F	M	F	M	F			
1872-1875	105	100	1	2	11	6	105	60	205	17	83
1876-1880	149	142	5	3	15	10	101	70	291	25	86
1881-1885	148	159	9	7	23	11	155	69	307	34	111
1886-1890	134	138	8	5	17	18	127	130	272	35	129
1891-1895	124	110	6	7	14	3	113	27	234	17	73
1896-1900	99	96	6	4	9	12	91	125	195	21	108
1901-1905	60	59	4	1	6	5	100	85	119	11	92
1906-1910	84	91	3	1	6	7	71	77	175	13	74
Totals	903	895	42	30	101	72	112	80	1798	173	96

M – males, F - females

*These infants appeared in the Vaccination Birth Register but then there is no further record of either vaccination or death. They are not included in any of the calculations for IMR.

** These figures exclude the infants not accounted for after entry in the Vaccination Birth Register.

Source: Births – Vaccination Register of Births; Infant Deaths – Vaccination Register of Births and Parish Burial Registers.

Table 4.2 shows the distribution of the 1,870 births in the agricultural townships of the Hemsworth district between January 1872 and autumn 1911, recorded in the Vaccination Birth Register. Of these, 72 of which have been discounted for the purposes of calculating the IMR as they could not be traced beyond birth. Again, as with South Kirkby, it is likely they had either moved to another district or died without their death being recorded in any of the local parish burial registers. Table 4.2 also shows that, although infant mortality was much lower generally than in South Kirkby, especially after 1890, it did rise during the 1880s and early 1890s. This increase coincided with the main period of railway building in the Hemsworth district. Some railway platelayers continued to be employed in the townships into the twentieth century, but these would mainly have been involved in laying the branch railways and sidings into the area's many collieries. During the years 1881-1895 of the 813 births which took place in the agricultural townships, 88 (or 11 per cent) were to the wives of railway labourers, railways excavators or platelayers. These accounted for much of the increase in the total number of births in the 1880s. Recorded births fell sharply from 1896 onwards in the agricultural townships, in part due to the Vaccination Birth Registers for 1897

and 1901 being missing. In 1907 the Hemsworth district was divided into two sub-districts which were called Hemsworth East and Hemsworth West. Most of the agricultural townships were in the east sub-district, but there were two or three in the west sub-districts. The Vaccination Birth Registers for Hemsworth West are missing and registration in the final volume for the entire district (i.e. 1905-06 before the district was split) appears to be less complete than in other volumes. That these registers are missing means that the data set for the agricultural townships is somewhat smaller for the period 1897 onwards (compounded by the lack of registers for the west sub-district from 1907) and this has a bearing on the statistical significance of analysis. Although the figures for South Kirkby were also affected by the incomplete registers for 1905 and 1906, they were not affected by the missing registers as South Kirkby was entirely in Hemsworth East and the impact was therefore much less. It should not be forgotten that, in any case one would expect fewer births in the agricultural townships as the population was falling with the general move away from the land due to new farming methods requiring less labour.

4.2 Infant Mortality in South Kirkby and the Agricultural townships

- Introduction

Table 4.3 compares infant mortality in South Kirkby with that of the agricultural villages at three different ages: 0-3 months, 0-6 months and 0-12 months.

Table 4.3: Infant mortality at 3, 6 and 12 months in South Kirkby and the agricultural townships.

Period	Total Births		IMR at 3 months		IMR at 6 months		IMR at 12 months	
			South Kirkby	Agric Villages	South Kirkby	Agric Villages	South Kirkby	Agric Villages
	A	B						
1871-1880	135	507	75	80	83	82	83	85
1881-1890	405	608	81	60	100	88	106	120
1891-1900	829	452	84	64	151	73	169	91
1901-1911	1,402	303	92	32	125	48	164	83

A = South Kirkby, B = Agricultural Villages
Source – Vaccination Registers for Hemsworth Registration District & Parish Burial Registers

The figures in table 4.3 show that infant mortality across all the three age groups was very similar in South Kirkby and the agricultural villages during the period 1871-1880. Also, although infant mortality in the first three months of life did increase over the 40 year period in South Kirkby, the increase was relatively slight, especially when compared to that of the two

other age groups. When compared to the IMRs in the agricultural villages, those in South Kirkby showed a marked increase in the 0-6 and 0-12 month age groups, whereas for the 0-3 month age groups there was relatively little change. This suggests that adverse environmental factors were an important determinant of the changes in the IMR in South Kirkby. That there was little change in the environment of the agricultural villages, would provide a plausible explanation for the comparative stability of the IMRs at low levels over much of the period.

Tables 4.1 and 4.3 also show the dramatic increase in the number of births in South Kirkby which, of course, reflected the enormous growth in population. This was due to the influx of miners from all over the country to work the rich coal seams of the area. The figures also show that the number of births in the agricultural villages declined sharply from the 1890s onwards. As noted above, in 1907 the Hemsworth registration district was split into two and some of the villages were placed in the western district, for which the Vaccination records are not available. The villages affected are Wintersett, Wragby, Hessle & Hill Top. Although these villages were quite small and accounted for a relatively small number of the total births in the agricultural villages as a whole, this factor obviously contributed to the fall in recorded numbers. Births in the agricultural villages were at their highest during the period 1881-1900, in part due to the numbers of railway workers living in the area whilst they were building the many railway lines which criss-crossed the district.

- **Factors which may have influenced infant mortality in South Kirkby and the agricultural townships**

This section examines those factors which may have had an effect on the IMRs in South Kirkby and the agricultural townships, particularly as regards the differences which emerged following the growth of the coal mining industry in the former.

- Twin births and illegitimate births

Table 4.4 – IMR for Twin Births and illegitimate births in South Kirkby and the agricultural townships 1871-1911

	South Kirkby IMR	**Agricultural Townships IMR**
Twin Births	603	464
Illegitimate births	280	111

Source: Vaccination Birth Registers for Hemsworth and Parish burial registers

Table 4.4 shows that both twins and illegitimate infants born in the agricultural townships had a better chance of survival than those born in South Kirkby. There were 29 twin births in South Kirkby over the whole period 1871 to 1911 and of these 58 infants, 35 died before their first birthday giving an IMR of 603. A further three children died before their second birthday. In the agricultural townships there were 17 twin births during the same period and of the 28 infants, 13 died before their first birthday. Additionally, two sets of triplets were born in the same family in the space or less than one year. All these infants died.

Examining the figures for twin births more closely reveals that there was a higher incidence of these, at 2.2 per cent of total births, in South Kirkby than in the agricultural villages where they made up 1.6 per cent of all live births. This higher proportion of twin births in South Kirkby with the associated very high death rate obviously contributed to the high IMR there. Indeed, if these twin/triplet births and resultant infant deaths are excluded from the overall figures we find that the overall IMR for South Kirkby (1872-1911) is reduced from 153 to 142 per thousand live births and in the agricultural townships from 96 to 91. These figures demonstrate clearly the effect of twin births on overall infant mortality rates.

As far as illegitimate births are concerned there were 104 such births in South Kirkby over the period 1871-1911. Eleven of these infants could not be traced after their birth and 26 died before their first birthday resulting in an IMR of 280. In the agricultural townships there were 83 illegitimate births. Only one of these infants could not be traced and another had its vaccination postponed. Nine of the illegitimate infants in the agricultural townships died before their first birthday resulting in an IMR of 111. Clearly illegitimate infants had a much greater chance of survival in the agricultural townships than in South Kirkby. That the infants were less likely to move away, perhaps indicated a higher level of family support for the mother in the agricultural townships than in South Kirkby. Over the whole period illegitimate births accounted for 3.6 per cent of the total births in South Kirkby as against 4.5 per cent in the agricultural townships. Although the percentage of illegitimate births in the agricultural townships was higher than in South Kirkby, these births had less of an impact on the IMR than in South Kirkby. For, if the illegitimate births are disregarded, then the overall IMR (1871-1911) falls from 153 to 148 in South Kirkby, but only from 96 to 95.5 in the agricultural townships. Elizabeth Fish (see this chapter 101-102) gave birth to 10 illegitimate children (7 whilst living in South Kirkby), Elizabeth Pearson of Thorpe Audlin gave birth to 6 illegitimate children and her sister Caroline also gave birth to an illegitimate infant. Only one of these six children could be traced in the CEBs for 1901, a 14 year old girl working as a domestic servant on a farm in North Elmsall, very near to her birthplace of Thorpe Audlin. In the five

women gave birth to at least two illegitimate infants, and four sisters gave birth whilst unmarried. Despite this, the infants born to single women in the agricultural villages had a better chance of survival to one year than legitimate children born in South Kirkby.

It can be seen therefore that twin births had a greater impact on the IMR than illegitimate births in both South Kirkby and the agricultural townships, although the illegitimate birth rate was not high in either case. It is not known why the rate of twin births was higher in South Kirkby but it is now known that the chances of a multiple birth increase with the age of the mother (as well as the genetic tendency for twins to run in families – as was the case with the Burtons in Little Smeaton). As we shall see, many of the miners' wives in South Kirkby continued child-bearing until after their fortieth birthday, but no attempt has been made to calculate the age of the mothers of twins. In the twenty-first century the risk of infant death is still 8 times higher for twins than for singletons *(University of Iowa 2004)* and the risks of brain damage are much greater as are those of long-term disabilities such as cerebral palsy.

Twins usually have a small birth-weight and are usually born prematurely. Such infants also need more warmth and require more careful feeding than single births. Mothers are less likely to be able to breast-feed twins and therefore much more likely to use artificial feeding. As we have seen above (Chapter 1) infants fed artificially were at much greater risk of death from diarrhoea than breast-fed infants due to the contamination of milk and inadequate cleansing of feeding utensils. During the period in question there would have been no special facilities available for premature babies, and therefore those fragile infants who would today survive to adulthood (albeit sometimes with brain damage to some degree or other) would have often perished during the first few months of life. If the effect of twin births was mirrored all over the country at the period in question, then it is clear that they would have contributed considerably to the IMR.

- Seasonality and Cause of Death

Another important factor influencing the incidence of infant mortality is that of seasonality. In the colder, winter months infants are more susceptible to respiratory infections, whilst hot, dry summers can lead to epidemics of diarrhoea. Both can therefore lead to peaks in infant deaths. Looking at the timing of infant deaths over the whole period from 1872-1911 reveals that 35 per cent of infant deaths in South Kirkby occurred in the fourth quarter of the year, 25 per cent in the third quarter, 18 per cent in the first quarter and 22 per cent in the second quarter. In the agricultural villages 28 per cent of infant deaths occurred in the first quarter, 21 per cent in the second quarter, 26 per cent per cent in the third quarter and 25 per cent in

the fourth quarter (these figures were calculated after deducting the deaths of two sets of triplets).

Month of birth is also a factor in an infant's risk of mortality (*Breschi and Bacci 1994: 157).* Those infants born during winter months are especially at risk of respiratory infections. As mentioned above, infants are at risk of contracting infections of the digestive tract during the warm season. This risk, however, varies according to the age of the child during the summer months, so once again the season of birth is a significant factor. Children born during the spring were usually still breast-fed during the summer and protected by the immunity provided by the breast-milk *(Breschi and Bacci 1994: 159).* However, a child born in the spring who was not breast-fed would not have this protection so the question of breast-feeding is closely related to this factor. Figures 4.2a and 4.2b show the births for each quarter of the year in South Kirkby and the agricultural townships from 1871 to 1910. The rapid growth in population, and therefore births, can be clearly seen from Figure 4.2a. Figure 4.2b, shows the gradual decline in births (apart from during the 1880s) in the agricultural townships.

Figure 4.2a - Births in South Kirkby 1871-1910 by season

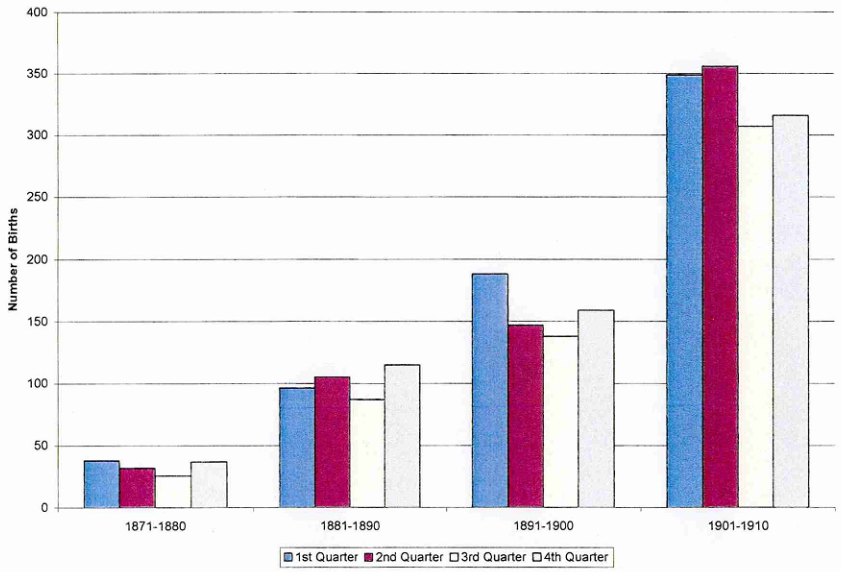


Figure 4.2b - Births in Agricultural Townships 1871-1910 by season

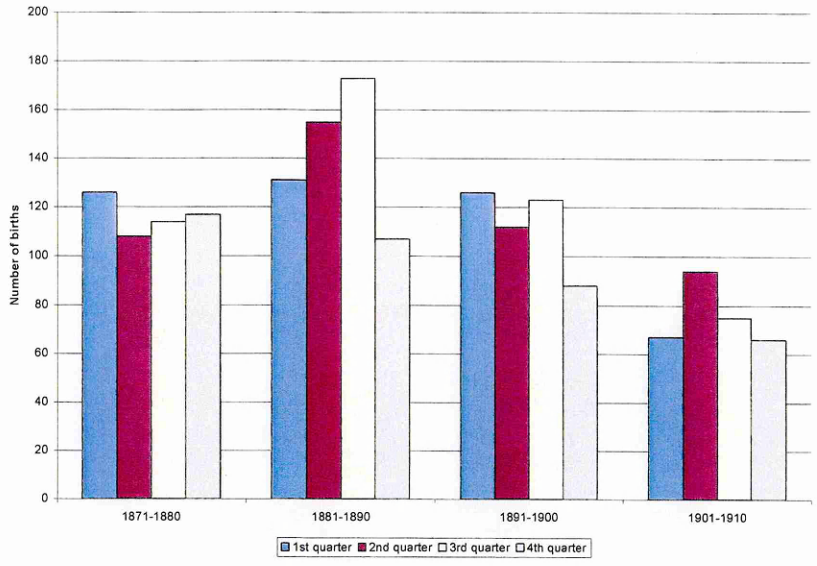
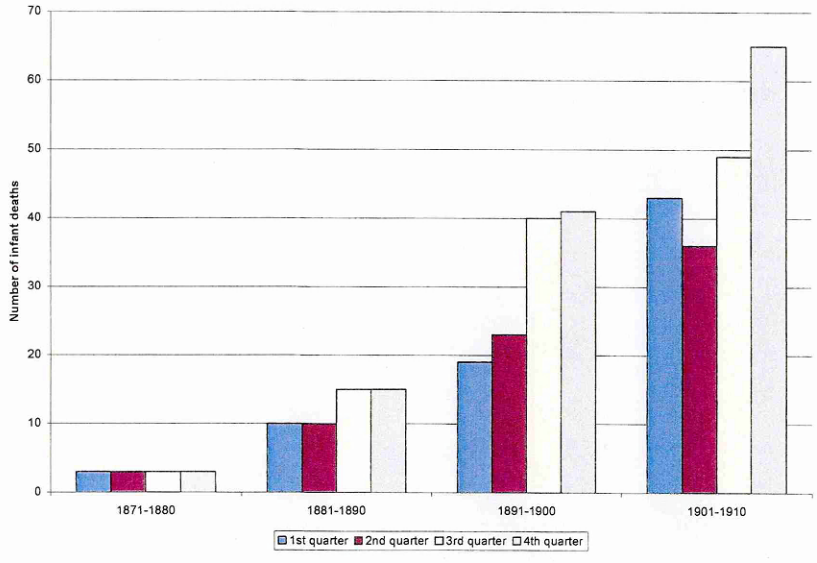
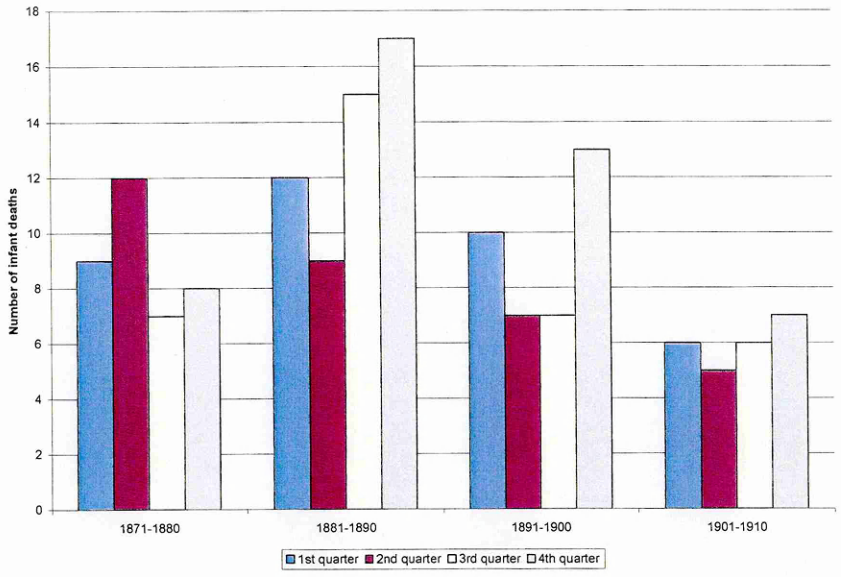


Figure 4.3a - Infant Deaths in South Kirkby 1871-1910 by season



Figures 4.3a and 4.3b show the infant deaths in South Kirkby and the agricultural townships according to season. It can be seen that infant deaths rose in South Kirkby in line with the increase in births. It is also clear that infant deaths were at their highest in the fourth quarter of the year in both South Kirkby and the agricultural townships apart from during the 1870s in the agricultural townships.

Figure 4.3a - Infant Deaths in the agricultural townships 1871-1910 by season



Source for Figs 4.2 & 4.3 – Vaccination Birth Registers and Parish Burial Registers

Figures 4.3a and 4.3b show us, however, that was no clear and consistent pattern as far as seasonality of infant deaths is concerned, although from 1891 onwards it is clear that infant deaths in South Kirkby were greatest in the second half of the year. In the decade 1891-1900 there were 132 infant deaths in South Kirkby. This equates to an expected 11 infant deaths per month or 33 per quarter. The seasonality index of these infant deaths is calculated by comparing the actual number of infant deaths to the expected number. So as there were only 28 deaths in the January-March quarters of this decade the seasonal value would be 84.3. For the April-June quarter it works out at 69.7; for the July-September quarter at 121 and for the October-December quarter at 124. It was only in the five year period 1896-1900 that the third quarter had the highest number of infant deaths in South Kirkby and this coincided with a period of particularly hot, dry summers (see Chapter 5). A large proportion of infant deaths during the third quarter is usually associated with diarrhea where a concentration of deaths in the first and fourth quarters is often indicative of respiratory infections.

Despite any advances in medical science which may have taken place in the intervening years, it is clear that the effects of seasonality were still marked in the early 1920s. The Times medical correspondence stated on 18 March 1922 that measles was continuing to take a heavy toll and remained the cause of approximately 50 deaths per week in London alone; most of these he says were under two years of age. The article went on to say that measles

remained the chief baby killer of the spring months, just as diarrhea was the chief of the summer months. The following observation was then made:

> Again, we may see in these curious fluctuations of disease a seasonal influence which acts with the regularity of a clock. By far the most important factor in epidemics seems to be the weather, the season. All common plagues are subject to it so that one can make out a calendar of disease which will be roughly accurate for any year *(The Times Medical Correspondence 1922: reproduced in The Times 18.03.02).*

- Demographic factors which may have an affect on infant mortality

Factors such as age of the mother and the number of children born to one mother (i.e. fertility) are also known to have an effect on infant mortality. Some of these demographic factors were examined and the results set out in tables 4.5, 4.6 and 4.7 below.

Table 4.5: Age of mother at the birth of the first child: wives of miners and non-miners

Age of mother	Number of Miners' wives	Number of wives of non-miners
16	2	2
17	4	0
18	8	5
19	17	4
20	19	3
21	28	5
22	29	2
23	26	1
24	20	7
25	18	8
26	12	1
27	6	11
28	16	2
29	17	0
30	3	0
31	3	3
32	2	1
34	1	0
35	1	1

Source: 1901Census Enumerator Books for South Kirkby and Vaccination Registers

Table 4.5 shows the ages at which mothers in South Kirkby gave birth to their first child. This was done using the ages of mothers and children given in the 1901 census linked to the dates of birth of children in the Vaccination Registers. It is recognised that there are flaws in this method as ages given at the census were not always correct (it has been noted that in some cases the head of household gave the ages of children as on their birthday in the census year regardless of whether the birthday was in January or December). Also we do not know the precise dates of birth of mothers or any children who were not born in South

Kirkby or elsewhere in Hemsworth. Therefore, for example, if a mother's age is given as 27 in the census and we know her four year old child was born in January 1897 we do not definitely know whether the mother was 22 or 23 years old at that time. A further point is that we do not know whether the mothers had given birth to any still-born children, who would not be listed in the vaccination registers, prior to the birth of their first living child. However, this exercise was undertaken to make a rough comparison between the fertility experience of the wives of miners and non-miners. Given that there were far fewer of this latter group, it was hypothesised that the miners' wives would have been younger on average at the birth of their first child. This was because the earnings of miners were generally greater than those of other workers, allowing them to marry earlier. Although this did not necessarily mean they would choose younger brides, this was likely. However, the mean age of the miners' wives at the birth of their first child works out at 23.4 years, that of non-miner's wives, 23.5 - virtually identical. However, the modal age for the miners' wives was 22 years, considerably younger than that of the non-miners' wives which was 27 years.

Table 4.6: Age at the birth of last known child of miners' and non-miners' wives.

Age of mother	Number of Miners' wives	Number of wives of non-miners
36	4	4
37	6	2
38	6	6
39	6	3
40	3	3
41	4	3
42	8	3
43	5	4
44	4	4
45	4	0
46	1	0
47	1	1

Source: 1901 Census Enumerators books for South Kirkby township within Hemsworth District + Vaccination Registers for Hemsworth.

The age of mothers at the birth of their last child was also examined where possible although here, once again, neither the census nor the vaccination registers can tell us if a woman had a subsequent still-birth. Based on these figures the mean age for the birth of the last child amongst non-miners in South Kirkby was 40 years, and among miners' wives 40.6 years: the median's being identical at 41 years. Again, no substantial difference. This suggests that, there was no difference in either of these aspects of the fertility experience between the two groups.

Using the information from the 1901 census enumerators' books, together with that from the Vaccination Registers, it was possible to calculate the mean number of living children of coal miners' wives of different ages (see table 4.7). What these average figures do not show is the wide variation in numbers of children per mother. For those mothers aged under 25 (a total of 42), five had three living children, although most had only one or two. Of the 70 mothers aged 26-30, two had five children each whilst the majority had two or three. Out of the 57 mothers in the 31-35 age group, six had six or more living children. In the 36-40 age group, nine out of the 44 mothers had six or more living children and of mothers aged 41-45, 16 out of the 48 mothers had six or more. It is likely that the figure for this last group would have been higher, as some children were likely to have left home.

Table 4.7: Average number of living children per mother of different ages (wives of coal miners)

Age of mother in years	Number of living children
21-25	1.6
26-30	2.7
31-35	3.4
36-40	4.0
41-45	4.4

Source: 1901Census Enumerators' Books for South Kirkby

Where possible the birth intervals were also analysed. It was found that families living in Faith Street, South Kirkby had the shortest birth intervals at 24.6 months. The mean birth interval in the rest of South Kirkby was 24.9 months; amongst non-miners it was 34.4 months; and in the agricultural townships it was 28.9 months. Again, these figures cannot take account of possible miscarriages or still-births. However, the difference between the three groups does seem to have been more marked. Although we have seen that, on the basis of the available data, the wives of miners and non-miners in South Kirkby gave birth to their first and last child at very similar ages, it would appear that the shorter birth intervals would mean that the wives of miners actually gave birth to more children than the wives of non-miners in South Kirkby or the mothers in the agricultural townships. Shorter birth intervals were often associated with the death of a breast-fed infant which would lead to a return of ovulation and as a result, the next pregnancy *(Preston 1978: 7).* Shorter birth intervals would naturally lead to a higher birth rate and as Ashby said 'it is the high birth rate in the mining districts that makes it (birth-rate) so high in Wales' *(1922: 7).* Ashby went on to say that it was often those

who were the most prolific who were the least well equipped for the role of successfully rearing infants.

Interestingly, new research appears to demonstrate a link between short birth intervals and poor maternal health later in life, 'We show... that having a short birth interval of less than 18 months between children carries higher risks of mortality and poor health' *(Prof Grundy of Centre of Population Studies at the School of Hygiene and Tropical Medicine in London, quoted in The Yorkshire Post, 12.09.2006).*

Although infant mortality was often linked to poverty and large families, Ashby stated that the child rearing habits of some communities were much more successful than others with similar levels of poverty and fertility. He cites the Jewish community of Manchester as an example of good child rearing practices. They lived mainly in the working class district of Cheetham which had in 1911 an IMR of 110 compared to 154 for the whole of Manchester. He stated that in this community there was a higher level of breast-feeding and fewer women working outside the home. These were important factors in keeping the IMR down as well as their cultural practices which meant they had cleaner food, ate more fresh meat and clothed their children better. Ashby maintained that because they were more temperate than most of the rest of the working classes they were able to spend more money on food and clothes *(Ashby 1922: 23-25).*

- Maternal health and nutrition

Despite the fact that miners were relatively well paid it would not appear that this necessarily led to better nutrition for their wives and children. Evidence presented by Valerie Dodgson in her B.Phil thesis on the Sheffield Park district (a predominantly mining district) suggests that the miner's wife usually had a far inferior diet to that of her husband. In the particular family cited by Dodgson, the wife and children had the same breakfast every day; tea, bread and dripping or jam. However, on Sundays the husband also had a bloater and on Mondays had cold meat leftover from Sunday. Tea was the same as breakfast, apart from one day when they have radishes. Lunch/dinner was as follows:
Sundays the whole family had mutton, greens, potatoes and suet pudding for lunch/dinner. Mondays the wife and children ate cold meat and potatoes and on Tuesday hashed meat and potatoes. On Wednesday the main meal was dumplings in gravy from the previous day. Thursday it was rice and treacle and on Friday, Barley broth and potatoes. On Saturday the whole family has sausages and potatoes. In addition to this the wife spends 3 shillings (by far

the biggest expenditure on food apart from 14 loaves) on her husband's dinners. The husband did not like to eat with the children. We see therefore that the wife and children do not have nearly as good a diet as the husband and one which would be quite inadequate for a pregnant women or nursing mother (*Dodgson 1997: Extract 3: no page number).* Whether this is typical or not is not known, but there is no reason to suppose that other members of the urban working classes ate much better. Ashton also suggests that miners would give their wives an allowance for food which may vary from week to week according to how much he earned. However, he always kept plenty for himself for gambling and drinking in pubs and clubs *(Ashton 1950: 191).* Dennis, Henriques and Slaughter concur on this point. They state that the miner gave a set figure to his wife and kept the rest for himself. However, if he was not able to earn much in a particular week, then the amount he gave to his wife would be reduced rather than his own spending money (*Dennis et al 1956: 188).* Although Dennis, Henriques and Slaughter are writing about a slightly later period (1930s and 1940s) many of the issues relating to family life were still the same. The miners (with very few exceptions) lived a completely different life to their wives and families. They spent very little time at home, but preferred to spend most of their free time in the pub or club *(Dennis et al 1956:).* The women therefore spent almost all their time in the company of other women and children.

In rural areas, agricultural workers usually had a plot to cultivate vegetables and fruit for consumption by themselves and their families. This (as well as probably keeping a pig or chickens) would mean that they enjoyed a much more varied and balanced diet than their urban counterparts. We see in chapter 6 that some miners did keep a pig or chickens, but the local council found that these were sometimes in too close proximity to the dwellings.

Despite the fact that there is anecdotal evidence that some miners' wives were involved in limited seasonal work, such as potato picking, generally there was no available employment for women in colliery districts such as South Kirkby and they were therefore unable to supplement their income themselves. It was not until after the First World War that improved public transport meant that women were able to travel to neighbouring towns to work in the textile industry or the growing retail industry. This also meant that young, single women were also better able to support themselves and therefore not obliged to marry at such a young age as in the past. This, in turn, helped to reduce family size.

Other sources lead us to suppose that miners' wives led similar lives in other countries. According to Carol Giesen *(1995:110)*, although attitudes had changed over the twentieth century, miners' wives in West Virginia had traditionally viewed their role as a nurturing,

subsidiary role to that of their husband and they rarely worked outside the home. Their role also often involved preparing special meals for the husband. Again, these women had often married at a younger than average age and usually failed to complete their education even as late as the 1960s. In those parts of northern France where coal mining was the predominant economic activity, there was very little opportunity for work outside the home for women. As a result the women married quite young *(Bideau, Desjardins & Brignoli 1997: 22-370.*

- Stillbirths

No discussion of infant mortality is complete without a discussion of to still-births. Although still-births were not a cause of infant mortality, they are closely linked to neonatal mortality. There is no record of still-births in Hemsworth at this period, but from 1907 onwards burials of still-born infants are listed in the records of Moorthorpe cemetery. According to these records, there appeared to be a high proportion of still-births in South Kirkby during the period 1907-1912. 98 burials of still-births are recorded in the cemetery records for this period (out of a total of 280 burials of infants). Of these 40 are to single women. Until early 1909 the gender of the still-born infants was not given. There are 19 still-births where the sex of the child is not given, 41 females and 38 males. Interestingly, a higher percentage of the still-births to single women were female: 22 women were female, 16 male and two unspecified. For the remaining 58 still-births, 22 were male, 19 female and 17 unspecified. One family in particular seems to have had a large number of still births. The records list the burial of a still born child to George Turgoose on 12.07.09. Still-born children of Alice Turgoose were buried in May 1910 and July 1912, of Mary Turgoose in September 1911 and of Edith M Turgoose in October 1910 and June 1912. These particular records show us that the women in the Turgoose family were in the habit of giving birth to illegitimate infants. Such infants clearly were at greater risk of being still-born or dying in infancy. However, they do not seem to have been a very healthy family, giving rise to suspicions that perhaps there was some genetic factor behind these still-births.

Clearly, the ratio of burials of still-born infants to live born infants in Moorthorpe cemetery is very high. The still-birth rate in South Kirkby was calculated for the year 1908. According to the Vaccination Register of Births there were 214 live births in South Kirkby during 1908 and that year there were 20 burials of still-born infants in the cemetery at Moorthorpe. This gives a still-birth rate of 93 per thousand live births (or 85 per thousand total births) which is well in excess of the rates which were recorded in the Rhondda *(Buchanan 1983: 95).* Hart and Wrigley both suggest that a high still-birth rate implicates maternal health and nutritional status as primary factors in the neonatal death rate *(Hart 1998: 215, Wrigley 1998: 440).* It is

perhaps possible that Moorthorpe cemetery may have been used for burials of still-born infants throughout the whole district rather than just for South Kirkby. Buchanan suggests *(1982: 93)* that there was some concealment involved in that a number of infants who died shortly after birth were passed off as still-births as burial was cheaper for infants who had never lived. In the case of illegitimate infants who were still-born there was also some question of infanticide, but this was always difficult to prove. There is no way of knowing whether any of the infants buried as still-births in the cemetery in Moorthorpe were actually born live.

Buchanan also states that still-births are central to the debate on the full extent of syphilis related infant deaths *(Buchanan 1983: 93).* Children of miners had low rates of infant deaths due to syphilis and there is no reason to believe that the large numbers of burials of still-born infants at Moorthorpe were in any way connected to this.

- **Individual Families in South Kirkby and the agricultural townships**

A close examination of the various sources reveals a large number of families of particular interest with regard to infant mortality in both the agricultural townships and South Kirkby. One of these lived in Thorpe Audlin, one of the agricultural townships. The head of household was William Fox who gave his occupation in both the Vaccination Registers and the censuses as retired tea planter. According to the Vaccination Registers and parish baptism registers he and his wife had eleven children (NB v = vaccinated, d = died, pp = vaccination postponed in the following lists):

Figure 4.4a: Children born to William and Eleanor Fox of Thorpe Audlin

Violet	born	04.10.86	v. 26.02.87
Agnes	"	05.09.88	v. 08.12.90 pp in spring 1889 – whooping cough
William	"	15.07.90	v. 12.11.90
James	"	08.05.92	d. 09.05.92
Henry	"	03.05.93	v. 03.04.94, d. 25.01.95
Margaret	"	06.03.95	v. 01.07.96
George	"	19.03.97	
Male	"	03.01.99	d. 03.01.99
Male	"	07.09.99	d. 08.09.99
Edna	"	19.07.02	d. 27.07.02
Nora	"	Oct 03	d. 23.12.03
Female	"	11.09.04	d. 18.08.05

It is no surprise that the mother of the children, Eleanor Fox, died in 1907 aged 42.

The source for this information and that in the following lists is derived from the Hemsworth Vaccination Registers and the South Kirkby Parish Burial Registers.

Another family of interest as far as infant mortality is concerned was that of Percy S Nevile, landed proprietor and JP, of Skelbrooke Hall in the village of Skelbrooke (see Chapter 2 for map). According to the Vaccination registers his wife gave birth to nine children as listed below:

Figure 4.4b: Family of Percy & Maude Neville of Skelbrooke

Maude E	born	14.04.74	v. 09.03.75
Sandford G R	"	23.10.75	v. 25.02.76
Malhert M H	"	14.05.77	v. 24.10.77
Cavendish B	"	08.04.79	d. 08.04.79
Gervys C	"	01.06.80	v. 19.11.80
Dorothy A	"	29.12.82	v. 21.04.83
Raymond P	"	03.03.85	d. 23.03.85
Guy L	"	02.10.86	v. 21.01.87
Joyce E	"	17.01.91	v. 22.11.91

Looking at these two families, it is clear that children of the middle and upper classes were not spared the scourge of infant death. According to the 1901 census Percy and Etheline Nevile had just two of their offspring living at home on census night, Maude, the eldest, and Joyce, the youngest. The elder boys would have been in the twenties by this time and the youngest one, Guy, probably away at school. Dorothy, the middle daughter, would have been 18 and she may have been away from home or may have died, but it is impossible to know.

As far as working class families in the agricultural townships are concerned John Arthur and Emma Burton of Little Smeaton had by far the most children. John worked at various occupations, usually as a farm labourer, but sometimes as a lime quarrier. According to the Vaccination Register and parish baptismal registers, Emma gave birth to a total of 19 children over a period of 20 years, 8 of them (including two sets of triplets) over a period of three years between February 1899 and January 1902 (Figure 4.4c).

Clearly the birth of one set of twins and two sets of triplets had a huge impact on the survival rates of infants in this particular family and in the village of Little Smeaton as a whole, as only 9 or 10 babies were born there each year. Indeed, over the period 1871-1911 the IMR for the village of Little Smeaton was 140 compared to 96 for the agricultural townships as a whole. If

the births and deaths of the multiple births to Emma and John Burton are deducted then the IMR for Little Smeaton is reduced to 111 for the whole period. Moreover, during the 1880s, according to the Vaccination registers the wife of another Burton gave birth to twins in Little Smeaton. Again both babies died within a few weeks of birth.

Figure 4.4c: Children born to John and Emma Burton of Little Smeaton

Harry	born	07.01.84	v. 21.04.84
Sarah E	"	30.09.85	v. 12.04.86
Albert	"	28.10.87	v. 09.04.88
Walter	"	20.08.89	d. 27.12.89
Arthur	"	20.08.89	d. 25.03.90
Frank	"	16.11.90	d. 21.12.90
Alice A	"	24.12.90	v. 11.10.92
Agnes M	"	18.04.94	v. 15.10.94
Kate E	"	16.06.95	v. 28.10.95
Fred	"	26.06.96	v. 19.10.96
Lawrence	"	06.02.99	v. 20.07.99
Elsie	"	11.11.99	d. 15.11.99
Gertrude	"	11.11.99	d. 14.11.99
Leonard	"	11.11.99	d. 12.11.99
Lily	"	26.09.00	d. 01.10.00
Ruth	"	26.09.00	d. 07.10.00
John	"	26.09.00	d. 29.09.00
Edward	"	17.01.02	v. 12.06.02
Thomas R	"	February 04	

The birth and death of these infants clearly had an adverse affect on the usually low IMR in the agricultural townships. According to the 1901 census John and Emma had six surviving children, Sarah, Albert, Alice, Agnes, Kate and Fred (Edward and Thomas were born after the census). It would therefore appear that Lawrence may have died, but sometime after his first birthday, as there was no record of his burial in the parish registers up to the end of August 1900. Harry would have been 17 by the date of the 1901 census so may not have been living at home. The short intervals between the births of Agnes, Kate and Fred suggest that Emma may not have been able to breastfeed at least the first two of these children, as the intervals between her earlier confinements tended to be around 19-22 months, apart from after the birth of the twins, when she may also have found breastfeeding difficult. The twins survived much longer (to 4 and 7 months) than did any of the triplets, although they ultimately succumbed. Twins were, as we have seen, far more likely to die before the first birthday. Lower birth weight, complications at birth and problems with breastfeeding are likely to have been contributory factors to their early demise. After the end of 1900 until the autumn of 1911 no infants in Little Smeaton whose births were recorded in the Vaccination Register or

Parish baptismal register died before their first birthday. This does not rule out the possibility of any infant deaths at all in Little Smeaton during this period, as there may have been infants who moved into the area after their birth. Such infants were ignored for the purpose of this research.

It would appear, however, that most of those who had large families in the agricultural townships were successful in raising them to beyond their first birthday, although there may have been stillbirths and miscarriages which do not show up in the vaccination records. Examples of these are John Charlesworth, a farmer of Wintersett, whose wife, Emma, gave birth to eleven children between March 1882 and October 1904 – according to the 1901 CEBs she was 39 years old and would therefore have been 20 when she gave birth to her first child and 42 when she had the last one, a boy who died aged seven months. Of the nine children born before the 1901 census, all but Joshua, the eldest were listed as living at home on census night. Another case is that of George Giles, a railway platelayer who appears to have moved around between three of the villages, and whose wife, Mary, had ten children between September 1894 and February 1905. Although all the children of George and Mary survived to vaccination, the eldest three, who would have been between 11 and 16 years, are not listed in the 1901 census return. It is possible they may have been away on census night, particularly the two elder who were both old enough (a boy 16 and girl 14) to be working, possibly in service. However, the eighth child, Amos, born in March 1899 does not appear on the census either, the most logical conclusion being that he died some time after his vaccination in July of that year. In the following lists, b = born, v = vaccinated and d = died.

Figure 4.4d: Children born to John and Emma Charlesworth of Wintersett

Joshua J Charlesworth	b. 02.03.82	v. 09.10.82 – not on 1901 CEB	
George Charlesworth	b. 04.03.04	v. 21.04.84	
William H Charlesworth	b. 30.07.86	v. 11.10.86	
Charles Charlesworth	b. 11.06.89	v. 21.10.89	
Ada Charlesworth	b. 25.02.91	v. 18.05.91	
Annie Charlesworth	b. 24.01.93	v. 07.06.93	
Emma Charlesworth	b. 28.02.95	v. 22.04.95	
Herbert Charlesworth	b. 24.02.97	v. 22.03.99	
Albert Charlesworth	b. 22.03.99	v. 28.06.99	
Henry Charlesworth	b.24.05.02	v. 03.11.02	
Male Charlesworth	b. 30.10.04	v. 02.05.05	d. 04.06.05

Figure 4.4e: Children born to George & Mary Giles

George H Giles	b. 14.09.84	v. 14.04.85 – not on 1901 CEB
Maud M Giles	b. 19.06.86	v. 18.10.85 "
Walter E Giles	b. 14.05.89	v. 21.10.89 "
William E Giles	b. 20.04.92	v. 17.10.92
Ethel C Giles	b. 18.06.94	v. 15.10.94
Daisy I Giles	b. 17.03.96	v. 26.10.96
Ada Giles	b. 06.02.97	v. 20.04.97
Amos R Giles	b. 15.03.99	v. 20.07.99 – not on 1901 CEB
Winifred S Giles	b. 06.11.00	v. 18.09.01
Female Giles	b. 05.02.05	v. 09.04.05

In South Kirkby, the family of Elizabeth Fish is of particular interest, particularly because the illegitimate birth rate there was not high. Also most women appear to have given birth to one, or occasionally two illegitimate children, but Elizabeth had at least ten! With regard to infant mortality, her family is also interesting in that the boys had a better survival rate to 12 months than did the girls. At the time of the 1891 census she was a single woman and head of household aged 29. There was no adult male living in the house on census night. At the time she had four children, all boys, aged from 14 to one year, the 14 year old already working as a coal miner. There is no occupation given for Elizabeth. Likewise, in all the entries in the vaccination register, there is no father's name given. Over the following 9 years she gave birth to a further six live infants, only one of whom, a girl, appeared to be still living at the time of the 1901 census. At that time she was living in the house of an older man, John Walton – farmer aged 65 - and is described as 'housekeeper'. She has four children living with her, three boys aged 16, 14 and 12 and a girl aged 3. Although two of the other five children born since the previous census lived to be vaccinated, neither of them appear to have survived until the 1901 census. According to the parish burial register she herself died in 1904 aged 42. Her eldest son, now aged 24, appears elsewhere in the census in South Kirkby and is married with a young wife. It is interesting to note that of the 10 children she is known to have borne, only one out of five girls survived infancy/early childhood, while four out of five boys did so.

Figure 4.4f: Children born to Elizabeth Fish of South Kirkby

Fred Fish	b. 12.02.87	v. 11.04.87
Alfred Fish	b. 28.04.89	v. 15.04.90
Herbert Fish	b. 12.04.92	v. 18.10.92 – not on 1901 CEB
Elsie Fish	b. 38.07.94	d. 02.08.94
Emily Fish	b. 08.09.95	d. 14.10.95
Annie Fish	b. 14.10.96	v. 20.04.97 – not on 1901 CEB
Edith A Fish	b. 10.08.98	v. 18.10.98
Jennie Fish	b. 20.06.00	d. 08.11.00

Source for Figures 4.4a-f – Hemsworth Vaccination Birth Registers, South Kirkby, Kirk Smeaton, Skelbrooke, Little Smeaton, Cold Hiendley and Womersley Parish Burial and Baptismal Registers, 1901 CEBs for South Kirkby, Kirk Smeaton, Litrtle Smeaton, Skelbrooke and Wintersett.

Elizabeth had two other sons before coming to South Kirkby, Arthur aged 24 at the 1901 census, and Edward aged 16. There was therefore an IMR of 500 for the family of Elizabeth Fish which is in line with the general rate for illegitimate births.

The above examples are given to show the diversity of the experience of infant mortality in the Hemsworth district at this time, across a wide social spectrum. Although coal miners were renowned for a high IMR it is clear that at the individual family level, this could be experienced by anyone from agricultural workers to local landowners. Some coal mining families will be examined in Chapter 5. These examples also demonstrate how just one family, with a high number of multiple births and therefore higher risk of infant death, can affect the IMR in a village such as Little Smeaton with a population of less than 250.

4.3 Medical Officers of Health for Hemsworth

The first MoH for Hemsworth District, Dr Wrightman, delivered his first Annual Report in January 1874 (after being appointed in July 1873). He did not give any details of deaths under one year, but stated that the total number of deaths under five years was 19. The Registrar General's Quarterly Returns inform us that eleven of these deaths were of infants under one year during the six month period. During this period there were a total of 66 deaths at all ages, of which Wrightman says, seven were due to fevers with 59 to other causes. There were no deaths, at any age, from diarrhoea.

It was only in 1898 that the MoH (Dr Coleman) began to include in his annual reports the cause of death of children under one year of age – previously he had given figures for under five years of age. Table 4.8 below sets out figures for three years selected at random. Diarrhoea and dysentery were grouped together in 1898 with in later years, a separate

category for enteritis. Similarly in 1898 separate figures are reported for bronchitis and pneumonia, although they are grouped together in later years.

The figures in table 4.8 show that there was little improvement over the 10 year period so far as infant deaths from preventable diseases such as intestinal and chest infections were concerned. 34 deaths were attributed to diarrhoea and dysentery in 1898 and 39 deaths from diarrhoea and enteritis in 1908. Similarly deaths from pneumonia and bronchitis increased from a total of 33 in 1898 to 35 in 1908. It should be born in mind, however, that births also increased over this period (See Table 4.9 below).

Table 4.8: Causes of deaths in infants under 1 year of age for selected years in Hemsworth District

Cause of death	1898	1904	1908
Measles	6	4	-
Diarrhoea & Dysentry	34	14	29
Enteritis	-	18	10
Bronchitis	29	-	-
Pneumonia	4	32	35
Injuries/accidents	1	-	3
Premature birth	27	21	66
and other causes	-	-	-
Whooping cough	-	3	7
Erysipelas	-	-	-
Diptheria	-	1	-
Epidemic influenza	-	1	-
All other causes	37	56	36

Source: Dr G E Coleman, MoH reports for 1898 and 1904 and Dr H P Wiltshire, MoH report for 1908, all for Hemsworth District

In 1894, Dr Coleman, the MoH for Hemsworth District, stated that the increased IMR was the result of "a policy of procrastination and delay" (*Coleman 1894: 2).* In that year the IMR for the whole district rose to 164 compared to 118 for the previous year. In the following year the IMR was lower at 129, but Dr Coleman says that it was still higher than it should have been. Table 4.9 also shows that the birth rate fluctuated, varying between 33.8 in 1890 and 41.7 in 1893. Thereafter it began to show signs of decline, albeit remaining quite high. We can also see the beginnings of the downward trend in the IMR from 1905 onwards (with the exception of 1911 when the particularly hot summer led to an increase in the number of diarrhoea deaths)

Table 4.9: Total Births, Birth-rate, Deaths, Death Rate and IMR in the Hemsworth District; 1883-1912

Year	Births	Birth-rate	Deaths	Death-rate	IMR
1883	433	36.8	203	17.1	115
1884	442	36.3	223	18.3	129
1885	479	38.0	216	17.1	152
1886	441	33.9	206	15.8	161
1887	466	34.7	218	16.2	111
1888	502	36.2	287	20.7	165
1889	506	35.4	246	17.2	162
1890	498	33.8	238	16.1	132
1891	577	39.4	287	19.6	159
1892	606	40.0	250	16.5	118
1893	650	41.7	318	20.4	163
1894	620	36.4	246	14.4	129
1895	681	32.5	300	16.8	152
1896	719	38.4	294	15.7	160
1897	777	39.3	311	15.9	153
1898	755	36.7	374	18.2	182
1899	772	35.9	365	17,0	154
1900	870	38.5	386	17.1	174
1901	877	37.1	401	16.9	179
1902	936	37.8	438	17.7	187
1903	1044	40.1	435	16.7	160
1904	1114	40.9	489	17.9	148
1905	1106	38.8	430	15.1	129
1906	1148	38.9	421	14.3	139
1907	1056	35.2	514	17.1	160
1908	1180	38.4	493	16.0	152
1909	1300	35.6	518	14.2	124
1910	1409	38.9	593	15.4	143
1911	1510	37.1	671	16.4	171
1912	1642	38.3	536	12.5	111

Source: MoH Reports of Dr Coleman (1884, 1889, 1895, 1905 and Dr Wiltshire (1909, 1913)

Dr Coleman had a very difficult task during his period as MoH in Hemsworth for his tenure of office coincided almost exactly with the period of most rapid increase in population, the result, as we have seen, of the expansion of coal mining in the district. He appeared to get little help from the Sanitary Authority in his attempts to improve sanitary conditions and bring down the ever rising IMR. The Rural District Council does appear to have been more cooperative and determined to make the necessary improvements. Dr Coleman left office in 1907 and was succeeded by Dr H Wiltshire who inherited an IMR which seemed finally to be on the decline. In his first annual report, delivered in 1908, Dr Wiltshire commented on infant mortality as follows:

> A careful study of the causes of the 69 infant deaths registered during 1907 justifies the opinion that at least one third of these lives might have been saved by the exercise of simple precautions. I am not prepared at present, however, to advocate the adoption of the Notification of Births Act, because it must be noted that the great majority of the preventable deaths do not occur during the first weeks of life....what is wanted is a system of regular home visitation for the practical education and supervision of mothers in regard to the care of the

> health of all the children from the baby upwards. For this purpose I would suggest some use being made of the midwives practising in the district.... They might be given a course of lectures, or a number of pamphlets to be distributed at the time they attend cases. An alternative would be the appointment of a number of district nurses. *(Dr H P Wiltshire, Annual Report, 1908:3)*

However, in his report three years later Dr Wiltshire seemed to have changed his mind. In 1910 more than one third of the total deaths occurred in babies under 12 months old. Deaths due to premature birth rose from 23 in 1909 to 49 in 1910, causing him to remark:

> There is surely something wrong with social conditions which produce results of this kind, especially when there are also a large number of 'still-births' which do not come into the records at all. *(Dr H P Wiltshire, Annual Report, 1911: 4)*

Dr Wiltshire reference to 'a large number of still-births which do not come into the records at all' seems to bear out the statistical evidence presented earlier in this chapter: 98 of the 280 burials of infants in the Moorthorpe Cemetary between 1907-12 being described at stillbirths.

In contrast to three years earlier Dr Wiltshire went on to say that he thinks the council would do well to adopt the Notification of Births Act (requiring notification of every birth within 36 hours whether alive or dead). He also stated that he believed the appointment of a health visitor was necessary.

In the conclusion to his report for 1910 he states:

> The outstanding feature in the district at the present time is the continued development of the coal-mining industry and the rapid influx of workers and their families. Although nearly 500 new houses were built during the year the provision of accommodation does not keep pace with the demands and the consequent overcrowding becomes a serious question for the council since it greatly hampers sanitary work and may make it extremely difficult to keep infectious diseases in check. *(Dr H P Wiltshire, Annual Report, 1911, 7)*

The difficulties faced by the MoHs in Hemsworth seem to be in line with the findings of Galley in his study of infant mortality in Sheffield and Birmingham. Galley says that the MoH in Birmingham, Alfred Hill, had identified the appropriate course of action to reduce the high IMR there, but did not appear to have the resources or the organisational structure to carry this out. This was despite the fact that Birmingham was run by a liberal and enlightened council, which was far from being the case in Hemsworth. Clearly, even in a city the size of Birmingham there was insufficient will to make available the necessary finances to tackle infant mortality.

4.4. Examination of Infant Mortality at selected locations in South Kirkby

The vaccination registers allow us to calculate the IMR down to street level. Table 4.10 shows the results of the calculations for some of the main streets in South Kirkby. Faith Street, Milthorpe's Row and Company's Buildings stand out as being among the worst areas as far as the IMR is concerned. These streets were constructed shortly after South Kirkby colliery opened to the north west of the town and were the nearest to it. Moorthorpe, which was a small district between South Kirkby and South Elmsall, also had a very high IMR. The residents there were almost entirely coal miners, working at either South Kirkby colliery or Frickley colliery, just to the south of South Elmsall.

Table 4.10: – Births, infant deaths and the IMR in various parts of South Kirkby over the period 1891-1911

District or street	Total Births	Total Infant Deaths	IMR
Faith Street	261	53	203
Charleville	71	5	70
Moorthorpe	391	72	184
Carr Lane	83	8	96
Company's Buildings	193	32	166
King Street	285	40	140
Queen's Terrace	114	15	131
Milthorpe's Row	89	13	146
Stocking Street/White Apron Street	58	12	207

Note: The figures for the IMR in the above table were calculated using the number of births (from the Vaccination Registe) and the infant deaths from it and Parish Burial Registers) known to have occurred amongst those babies who were born in the particular streets.

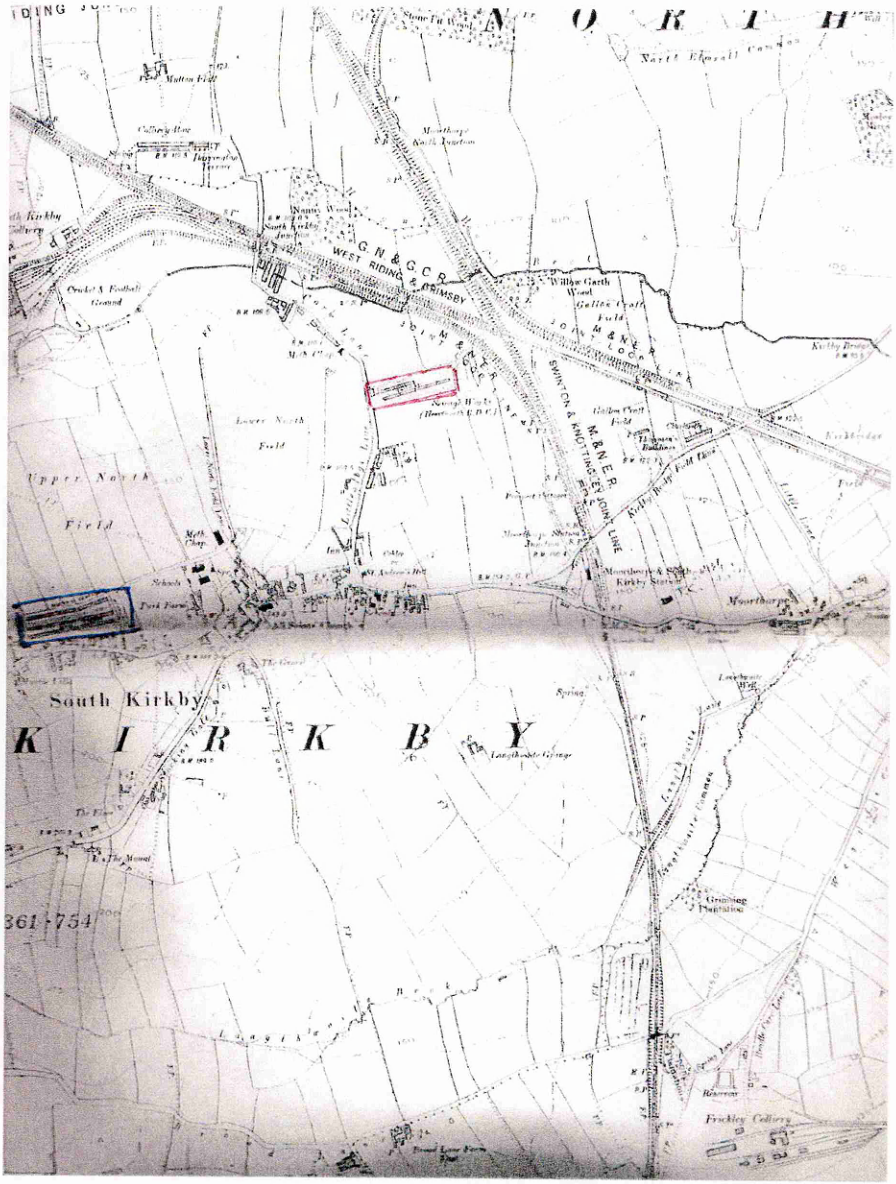
However, Stocking Street and White Apron Street, which are the two main roads through the town actually had the worst IMR (although note thel number of births was small) in South Kirkby over the whole period 1891-1911. These roads consisted of older housing with a greater mix of residents, i.e. there were agricultural workers, tradesmen etc. as well as colliers living there; only twenty-six out of the 58 parents (56 fathers and 2 mothers) named in the Vaccination Registers were coal miners, whereas in the other streets of South Kirkby, over 90 per cent of fathers were employed in the coal mines in some capacity.

King Street and Queen's Terrace were part of a housing development built in the early 1900s near the centre of town. Here, although still fairly high, the IMR was noticeably lower than in the older colliery housing referred to above, such as Faith Street. From the 1907 Ordnance Survey Map it would appear that more thought had gone into the planning of this

development than was the case with the earlier colliery housing. They do not, in fact, appear dissimilar to the estates built between the two world wars.

Figure 5 shows Faith Street outlined in red. King Street and Queen's Terrace are outlined in blue. The district of Moorthorpe can be seen at the extreme east of the map. South Kirkby colliery is shown at the north-west of the map and Frickley colliery at the south-east.

Figure 4.5: Map of South Kirkby showing location of Faith Street, King Street, Queen's Terrace and Moorthorpe



Source: Taken from 6" Ordnance Survey Map from Wakefield Archives.

4.5 Conclusion

It is clear from tables 4.1 and 4.2 that the IMRs for both South Kirkby and the agricultural townships in the period 1871-1885 were both very similar and below the national average at that time. The IMR for the agricultural townships remained consistently below that for England and Wales throughout the whole period to 1911 while the rate for South Kirkby grew steadily and quite steeply. This is underlined by the fact that the increase was concentrated in the 4-12 month age group (Table 4.3). This divergence suggests that the change in the environment resulting from the shift from an agricultural township to a much larger coal mining community was largely responsible for the increase in the IMR. We have also seen above that the wives of coal miners had shorter intervals between births than the mothers in the agricultural townships giving them less time to recover between births. We have seen too that, according to the available data, there was little difference in the age at which the different groups gave birth to their first and last child (Tables 4.5 and 4.6). Given that the miners' wives had shorter birth intervals, it would appear that they experienced a greater number of pregnancies than the mothers in the agricultural townships. This could have contributed to the higher IMR in South Kirkby. From the data presented above it is impossible to say how far the increase in the IMR in South Kirkby was due to the culture and child-rearing habits of the incoming miners' families. This will be examined more closely in Chapter 6, through the situation in just one street – Faith Street, from 1894, when the first residents moved in, to 1911. It does seem highly probable, however, that the introduction of large numbers of miners and their families into a district which had a sanitary infrastructure more suited to a smaller, rural population, was the main contributory factor. The environment which was created by this huge influx of coal miners and their families (and the consequent growth in population) will therefore be explored more closely in the next chapter (Chapter 5).

Without access to the Vaccination Registers which can be linked to other sources such as the CEBs and the minutes of sanitary committees, such an examination of South Kirkby and the agricultural townships on this detailed scale would not have been possible. Here we are dealing with individual mothers and fathers, the births of their children and subsequent deaths. The Vaccination Registers enable us to construct actual families and trace their movement from street to street, township to township. Thus this research is able to look at a relatively small number of births but in a very detailed and intimate way rather than other studies which have relied on large amounts of aggregative data. These large scale studies certainly allow comparative calculations of infant mortality to be made for large parts of the country, but do not allow us to see the individual families and communities behind the

statistics. We also have the opportunity to observe how infant mortality actually occurred in individual families, where they actually lived and in what circumstances (see above figures).

As we have seen the Vaccination Registers also allow us to explore factors such as twin/ multiple births and illegitimate births. It was noted above (p 101) that twin births had a greater impact on the overall IMR in both South Kirkby and the agricultural townships than did illegitimate births. In South Kirkby the deaths of twins inflated the IMR by 11 deaths per 1000 live births and in the agricultural townships by 5 deaths per 1000 live births. This is something which contemporary observers do not seem to discuss in much detail. Indeed there seems to have been more emphasis on infant deaths attributed to 'vice' (overlying – believed to be caused by drunkenness, and syphilis). However, overlying accounted for fewer than 2 infant deaths per thousand live births in England and Wales *(Buchanan 1982: 104)*, whilst syphilis accounted for 1.77 deaths per thousand live births *(Newman 1906: 68-69).* It is probable that the doctors of the time believed that more could be done to prevent infant deaths due to syphilis and alcohol than to prevent deaths of twins. As we have seen above *(p 99),* although the IMR for illegitimate infants was higher than that for legitimate infants, the death rate for this group was not as high as that for twins/multiple births.

As infant deaths were not usually at their highest in the summer months (when diarrhoea was likely to be a factor) It would appear the affects of seasonality with regard to diarrhoea deaths were not so pronounced in South Kirkby as in many Victorian towns and cities, particularly during the 1890s. However, we do see (*Tables 4.3a and 4.3b above)* that there was a higher proportion of deaths in the third quarter in South Kirkby than in the agricultural townships, indicating that the conditions in South Kirkby were more suited to the spread of intestinal disease. The fourth quarter was usually that with the greatest number of infant deaths in both South Kirkby and the agricultural townships. In South Kirkby the smoky atmosphere both outdoors and within the home (caused by constant coal fires combined with poor ventilation) would affect the lungs of young infants far more than those of adults, leaving them at greater risk of respiratory infections. The housing in the agricultural townships was generally older and therefore likely to have been damper and even less adequately ventilated than those in South Kirkby. As a consequence, infants would again have been at risk of respiratory infections in such conditions.

We have also seen in this chapter how a study of a relatively small community allows us to examine individual families and the impact that infant deaths within some of these families have on the local IMR. The Burton family *(Figure 4.4c)* is particularly interesting in this

respect. It also enables us to see that although the miners had a notoriously high IMR there were upper and middle class families *(Figures 4.4a and 4.4b)* who suffered high rates of infant deaths.

This chapter has also utilised the data from the records of the municipal cemetery at Moorthorpe to examine still-births from the autumn of 1907 (when the first burials took place there) until the end of 1912. These records, which are still kept at the cemetery, record burials of still-born infants. As still-births did not have to be registered until some 20 years after this period, the records offer a unique opportunity to examine the ratio of still-births to live births and total births. As no addresses are given in the case of still-born infants it is impossible to know whether the parents actually lived in South Kirkby or in neighbouring townships. Nevertheless, it would appear (see page 111) that still-birth rates were roughly twice the national rate in 1930 when it was 41 per thousand total births *(Buchanan 1983: 95).*

Thus we can see that these local records (particularly Vaccination Registers and cemetery records) are invaluable when undertaking the study of a relatively small community such as South Kirkby as they enable us to examine what was happening at a local level and set this against our existing knowledge of infant mortality at a national level.

5

IMPACT OF THE ENVIRONMENT UPON INFANT MORTALITY IN HEMSWORTH

In Chapter 4 we have seen that in the townships of Hemsworth District, where there was little or no social or demographic change, the IMR remained consistently low for that era. However, in South Kirkby where there was a steep increase in the population, almost entirely due to immigration of miners, there was an accompanying rise in the IMR. As we have seen in chapters 1 and 4, there are many different factors involved in whether the IMR is high or low in a particular area, at a particular time. However, there is still no consensus as to the weight to be attached to each of these factors. It is, nevertheless, accepted that one factor that cannot be ignored is the environment, particularly the sanitary environment. This chapter will examine the impact of the environment on the IMR in Hemsworth, with particular reference to the colliery township of South Kirkby and to a lesser extent, the agricultural townships of the districts. Specific reference will be made, where appropriate, to the work of I H Buchanan, the leading authority on infant mortality in coal mining districts *(Buchanan 1983).* The chapter is also organised around the work of the Hemsworth Rural Sanitary Authority, the Hemsworth Rural District Council and the medical officers of health who were responsible for Hemsworth during the period under consideration.

Earlier chapters have referred to the study by Buchanan of infant mortality in coal mining communities. Buchanan made a detailed study of infant mortality in eight coal mining districts. These were grouped in pairs, Rhondda and Aberdare, South Wales; Houghton le Spring and Hetton le Hole in Co. Durham; Wigan and Hindley in Lancashire and Blantyre and Larkhall in Lanarkshire (*Buchanan 1983: 27).* Buchanan tabulated the IMR for the different districts in 5 year periods and found that in most years the highest IMRs occurred in one of the Welsh districts, with the two Lancashire districts coming close behind. Buchanan also noted that whilst mortality rates in general fell between 1880 and 1910 there was scarcely any reduction in the IMR. Thus in the decade 1871-80 expectation of life at birth in England and Wales was 41.4 for men and 44.6 for women and by 1910-12 this had risen to 51.5 for men and 55.4 for women. But this was in spite of a static infant death rate (*Buchanan 1983: 89).*

Although Buchanan examined many different factors likely to have been implicated in high levels of infant mortality, the thrust of his argument was that environmental factors were of

central importance. Although enormous advances were made towards cleaner, safer sanitary environments in much of England and Wales during the early years of the twentieth century, the exceptionally hot, dry summer of 1911 with high numbers of diarrhoea deaths, demonstrated that the environment was still a factor when conditions were right for this *(Buchanan 1983: 58)*.

Other factors were, however, involved in deaths from diarrhoea. For the returns of health visitors in Wigan suggested that between one in five and one in three of all infants dying as a result of diarrhoea had been weak from birth *(Buchanan: 86)*. Whilst Buchanan also noted that malnourished infants were more likely to die from diarrhoea than those who were well fed (*Buchanan 1983: 87)*.

Environment was not only involved in infant deaths due to diarrhoea, but was also an important factor in deaths from respiratory disease. Although respiratory disease often followed common infections it was often related to climate, but also to urban life where atmospheric pollution, particularly industrial pollution, was widespread (*Buchanan 1983: 74)*. Colliery districts in particular had high levels of industrial pollution, where there were extremely smoky atmospheres due to burning cheap coal and waste from the mining operations *(Buchanan 1983: 86)*.

As far as the situation in Hemsworth is concerned, we have in 1888 a comment from Dr G E Coleman, its MoH from 1883-1906:

> many sanitary improvements need to be accomplished, especially with regard to the drainage and water supply of the colliery townships, where the altered conditions caused by the increased numbers have now rendered quite inadequate the arrangements which formerly sufficed for the then smaller population *(Dr Coleman 1888: 4)*.

That year the IMR in Hemsworth was 165. It was almost identical the following year when, once again, Dr Coleman made very similar comments in his annual report. He stated that eleven infant deaths in 1889 were due to diarrhoea, although the 2nd and 3rd quarters of the year had the lowest numbers of infant deaths. Indeed, as discussed in a previous chapter, it was only in the decade 1891-1900 that the 3rd quarter of the year (i.e. July-September) had the highest number of infant deaths and even then by only the narrowest of margins. Generally speaking it was the 4th quarter of the year which had the highest number of infant deaths. This would suggest that, although there were a significant number of infant deaths caused by diarrhoea, etc. in South Kirkby, respiratory diseases inflicted an even higher toll on young life.

5.1 Sanitary History of Hemsworth

- **Sanitary Authority**

Hemsworth Rural Sanitary Authority was established under the Public Health Act of 1872, the first meeting being held in the Board Room at Hemsworth Workhouse on 22 August 1872. The chairman at this first meeting and throughout much of the 1870s was the Rev. Champneys. Other members included two local landowners and JPs, farmers (generally farming moderate to large acreages), a number of private residents such as Mr Nelstrop, a grocer and draper, Mr Scholey, postmaster and George Camplin, a quarry owner, to name but a few. A committee was elected at the second meeting of the Authority, the meetings of which were held on a regular basis. The committee was re-elected every May and many members appear to have served a number of terms of office. Meetings were generally well attended. It would appear that there was little change in those attending with the same names appearing for many years.

Also acting as ex officio members were a number of local landowners and JPs including Lord St Oswald of Nostell Priory, on whose land the first deep coal mine in Hemsworth was sunk during the 1860s. In the 1880s a Colonel Ramsden became chairman of the committee. Most of the committee members were more interested in maintaining the status quo and their own power and influence in the area than in really serving the local community. For instance, Lord St Oswald opposed the building of more houses in the area as he felt the influence of the miners was not good. Others, such as the local tradesmen were the chief rate payers. They, of course, were keen to keep rates as low as possible. Thus in 1873 a charge of only ½ penny in the pound was levied in order to meet the demands of the Public Health Act of 1872. Presumably this was the minimum possible.

Prior to the election of the sanitary committee, the Hemsworth Guardians (Poor Law Guardians, many of whom were also elected to the sanitary committee) hoped at first that they could appoint a Medical Officer of Health (MoH) jointly with Doncaster, but this came to nothing. Dr Wrightman was appointed as the first MoH in Hemsworth and took up his post at a salary of £100 per annum in July 1873. He presented his first report to the Sanitary Committee on 4th September 1873 and stated that the district was generally healthy. He went on to comment that during July and August there were 35 births and 17 deaths, but according to Dr Wrightman, only four of these deaths were due to preventable diseases! *(Minutes of Hemsworth Sanitary Authority,1873: 22).* Dr Wrightman remained as MoH in Hemsworth for six years. He appears to have been a conscientious MoH,

making numerous visits such as one to the railway huts at Royd Moor near Little Smeaton. According to the minutes of the Sanitary Authority he made his first visit to the railway huts at Royd Moor near Little Smeaton in January 1876. These huts provided accommodation for the navvies who were building the railways and their families (see Chapter 2: 49) In May of that year Dr Wrightman reported that little had been done by the contractors to improve the huts and again two months later he stated that they were not sufficiently ventilated and the water supply was very deficient. In September 1876 Dr Wrightman and the inspector of nuisances paid a midnight visit to the railway huts at Royd Moor and found them to be overcrowded, largely due to the fact that there were too many lodgers *(Minutes of Hemsworth Sanitary Authority, 1876: 131-36)* Dr Wrightman described the conditions there as overcrowded and insanitary *(Hemsworth Sanitary Authority Minutes 1876: 102).*

In his first annual report Dr Wrightman stated that he had found many cottages without any privy accommodation at all. Many houses were damp because of a lack of spouting and this was a cause of disease – sometimes fatal. Pig styes adjoining some houses were very objectionable – filthy liquid soil was percolating through the walls, making the cottages both damp and unhealthy *(Dr Wrightman, 1873: 32)*

In chapter 2 the penny-pinching attitude of the Sanitary Authority is discussed with regard to the much reduced salary for the second MoH as well as Dr Coleman's comments regarding the unwillingness of the Authority to spend money on the necessary improvements. In view of these comments it can be readily appreciated why the local landlords and tradesmen who sat on the committee of the sanitary authority were often slow to act in the interests of the population at large. For example, during the late 1880s there was much discussion at the meetings on whether or not to provide allotments for the residents of the township of Ryhill. Dr Coleman thought this would be a good means of improving the diet of many of the colliery workers and the vicar of the local church offered to give some land for this purpose. However, it was generally agreed by the committee not to go ahead with this scheme, it being felt by some members as rather pointless since most of the inhabitants were coal miners and seen to be itinerants.

5.2 Dr Coleman and Dr Wiltshire as MoH for Hemsworth

Both Dr Coleman and Dr Wiltshire were young men when they became MoH for Hemsworth, having each qualified just four years prior to their respective appointments.

Dr Gerald E Coleman had trained at Edinburgh and Leeds and after qualifying in 1879 worked in Leeds General Infirmary. He remained as MoH for Hemsworth for 24 years until 1907. The two men had to contend with quite different problems with regard to the environment and its effect upon infant mortality. Most of the problems faced by Dr Coleman were related to the external sanitary environment, such as securing a supply of pure water together with effective scavenging, drainage and sewerage. These problems had largely been dealt with by the time Dr Wiltshire took over and he was therefore able to turn his attention to the domestic environment. By this time infant mortality had become one of the major concerns of the medical establishment. In common with MoHs in many other districts, Dr Wiltshire was keen to employ health visitors who would be able to educate mothers in the best child rearing practices, with particular emphasis on hygiene and food preparation as well as proper care for sick infants and children.

In his report for 1889 Dr Coleman stated that:

> In reviewing the sanitary history of the past year, I would like at the outset, (to) congratulate the Authority on having recognised and appreciated the change that recent years have effected in transforming the District from an agricultural to a colliery district. In previous reports I have endeavoured to bring this fact prominently before the Authority *(Dr Coleman 1889: 4).*

He went on to say that he had forcibly pointed out on many occasions that the conditions which in former years sufficed for the smaller agricultural population were completely inadequate for the present increasing colliery population.

Dr Coleman stated on a number of occasions that the water supply, sanitary arrangements, etc. of the past were inadequate for the growing colliery townships, an example of the effects being in the outbreak of enteric fever at Milnthorpe's cottages in South Kirkby in October 1889. On 7th November 1889 Dr Coleman stated that the outbreak of enteric fever at Milnthorpe's cottages and Colliery cottages in South Kirkby had abated and that it had been caused by polluted well water *(Minutes of Hemsworth Sanitary Authority 1889: 77-78).*

In his annual report for 1892 Dr Coleman once again highlighted the sanitary and environmental problems of the district. He pointed out that the five most important sanitary defects in Hemsworth were:

1. the insufficient water supply
2. the defective drainage
3. the pollution of streams and watercourses by unpurifed sewage

4. the absence of any systematic scavenging
5. the need for an infectious diseases hospital.

An example of the disease caused by such sanitary defects was the outbreak of enteric fever at Shafton Two Gates in March 1898. Here the drinking water was drawn from a well which was in close proximity to a privy midden and a badly constructed drain. An analysis showed that the water was contaminated by sewage and, as a result, was not fit for drinking. A further example occurred at 15 Outgang Terrace, Kinsley, in October 1897. This cottage was one of a few rows of modern cottages erected subject to the bye-laws of the council, each with a front living room, back kitchen, cellar, two bedrooms and a garret. A privy was provided for each cottage and an ashpit for every four households. However, upon investigation the MoH found that the drainage was not good, the scavenging had not been satisfactory recently and was aggravated by tenants emptying slops into ashpits despite frequent instructions to the contrary from the sanitary inspector *(Dr Coleman, Special Reports 1898: 2-5).*

In his report for 1893 Dr Coleman made reference to the birth rate which had increased to 40 as against to 34.8 a decade earlier. Again, in the following year Dr Coleman stated that the increased infant mortality rate was the result of "a policy of procrastination and delay". That year the IMR increased to 163 compared to 119 for the previous year leading to Dr Coleman to write:

> It is with regret that I have to record that nothing has been accomplished during the past year to remedy the insanitary conditions mentioned *(Dr Coleman 1893: 2).*

Throughout his period of office as MoH Dr Coleman continued to make similar remarks about the inadequate water supply and insanitary conditions through the Hemsworth district in general, and in the new colliery townships in particular.

Writing the following year, Dr Coleman drew attention to the condition of the housing in the district. However, it was not so much the houses themselves that caused the problems (although many were damp and had poor ventilation) as the water supply, drainage and associated sewerage systems. There were repeated references to these in the MoH reports (including those of the monthly meetings of the Sanitary Authority as the well as Annual Reports) particularly regarding contaminated drinking water being the cause of the numerous outbreaks of enteric fever, etc:

> Whilst many new buildings are erected under the Bye Laws the yards and immediate surroundings of many of the rows of houses are capable of improvement. As they are now, the ground in their immediate vicinity is soddened with filth, unflagged, and in wet weather impassable and unprovided with any proper road of approach *(Dr Coleman 1893: 2-4).*

In 1894 the IMR was somewhat lower at 128, but Dr Coleman stated that it was higher than it should have been and that 'overcrowding, uncleanly habits, improper feeding and general disregard of the elementary laws of health by parents are mainly responsible for the excessive mortality to which diarrhoea and bronchitis so largely contribute' *(Dr Coleman 1894: 4).*

These remarks were directed at both the Sanitary Authority and the coal miners whose habits, he believed, were contributing to the high IMR. He went on to say:

> It is on account of the disregard, the ignorance, the indifference of this class [miners] of the most ordinary rules of health, which have so much enhanced the difficulties with which the Authority have to deal *(Dr Coleman 1894: 1).*

As well as criticising the miners, he stated that the 'increased deaths, zymotic, and infant mortality rates were the result of a policy of procrastination and delay' *(Coleman 1894: 1).*

In the same year he also criticised the scavenging arrangements in the district. Hemsworth was apparently still the only township where an attempt was made at systematic scavenging and he stated:

> In all the other townships, the old state of affairs still exists, by arrangement, usually with farmers, with the result of large accumulations of faecal matter and ashpits full to overflowing *(Dr Coleman 1894: 4).*

Dr Coleman's annual MoH report in 1894 was the last one produced under the regime of the old Rural Sanitary Authority. From his comments 10 years later it seemed that he had found the Rural District Council more cooperative and understanding as to the needs of the rapidly growing population when he spoke of the 'energetic sanitary administration of the council' *(Coleman 1905: 4).*

Dr Coleman was succeeded in 1907 by Dr Herbert P Wiltshire who had a BA from Cambridge and had gained his MRCS at Leeds in 1902. Prior to his appointment as MoH in Hemsworth he was senior house surgeon at Scarborough General Hospital. In his annual report for 1909 Dr Wiltshire stated that the IMR for the district for the past twelve months was 152, which, though lower than the average of the past ten years, was still far too high. The following is his analysis of these early deaths:-

1)	Premature birth and early wasting	66 deaths
2)	Diarrhoeal diseases	39 deaths
3)	Bronchitis & pneumonia	32 deaths
4)	Measles & whooping cough	7 deaths
5)	Other causes	36 deaths

He went on to say that:

> It is with regard to 2) and 3) that a great saving could probably be effected by the exercise of simple homely care at the proper time. It is not designedly, but through ignorance, that this care is withheld, and in my opinion the only hope lies in a scheme for getting into personal touch with the home and guiding the mothers into right lines... *(Dr Wiltshire 1909: 4)*

Dr Wiltshire pressed the Rural District Council to appoint a lady health visitor to vist new mothers to offer advice on basic hygiene and child-care, and particularly to encourage breast-feeding. However, in mining areas, an inability to breast feed was the main reason for ceasing to do so, rather than fashion or convenience. As Dwork says 'it was only among middle-class mothers that there was a reluctance to breastfeed' *(Dwork 1987: 57).* Although Dr Wiltshire instigated the appointment of a health visitor in Hemsworth in 1908 it has not been possible to trace any records they may have made. It is known that in some areas records of health visitors provide useful information as to the proportion of mothers who breastfed and for how long. The size of families in colliery areas, the shift system, etc. placed a heavy burden on the wives of colliers and the mother was not always well nourished despite the relatively high pay of miners. Condensed milk was often used by miners' wives and its high sugar content made it a worse alternative to breast milk than raw cow's milk. Whichever type of milk was used was used, fresh cows or condensed, there was the ever present danger that it would become contaminated in the damp, poorly ventilated and over-heated homes of the miners, particularly in the summer months when there would be little provision for the safe storage of perishable foodstuffs. This was pointed out by Dwork who noted that (as referred to in Chapter 1: 8) although ensuring a pure milk supply was essential, the absence of proper hygiene within the home meant that milk became contaminated at the preparation stage, thus exposing infants to impure milk *(Dwork 1987: 51-69).*

In 1913 diarrhoea and enteritis accounted for 60 infant deaths and Dr Wiltshire stated that:

> Much of this mortality might be prevented if the mothers had more knowledge of the proper feeding and care of their infants. Most useful work is being done towards this by the two health visitors, but the work, as I reported last year cannot be adequately performed by the present number. Owing to the

> scattered nature of the district, it is impossible for them to visit the cases sufficiently often to see that their advice and instructions are being carried out *(Dr Wiltshire 1914: 2-3).*

The tone of this comment is less critical of the mothers than some of the comments of Dr Coleman (see his comments which are quoted on page 132). Dr Wiltshire implied that the mothers merely lacked the necessary knowledge to rear their children safely in an urban environment, whereas we have seen that Dr Coleman referred to their disregard and disinterest in trying to improve the health of their children. Dr Wiltshire's approach was thus quite different from that of Dr Coleman, although both were influenced by the contemporary attitude and medical opinion towards infant mortality in general. This had changed considerably over the time since Dr Coleman took up office. This difference is further highlighted by further comments made by Dr Wiltshire in his report for 1913:

> Forty deaths were caused by premature birth. I am of the opinion that a great many of these deaths are preventable if expectant mothers could be taught to realise the importance of attending to their general health at these times and taking the necessary precautions to ensure their having healthy and fully developed babies *(Dr Wiltshire 1914: 3).*

Before the turn of the century, prematurity as a cause of infant death was widely regarded as a non-preventable cause. However, this comment by Dr Wiltshire seems to suggest that medical opinion had changed on this point. Indeed, it seems that the main difference between the two MoHs were the slightly different eras in which they worked. When Dr Coleman became MoH, whilst infant mortality was regrettable, it was widely accepted that it a large proportion of it could not be prevented. As we have seen, by the time Dr Wiltshire was appointed over 20 years later, there was a much greater impetus to prevent the enormous loss of life which the IMR implied.

5.3 Hemsworth Rural District Council

In 1895 the Hemsworth Rural District Council was established and this proved much more cooperative with the MoH and effective in dealing with sanitary matters than did the old Rural Sanitary Authority. This may well have been because, unlike the Sanitary Authority, it was more democratically elected. The results are evident in the following comment from Dr Coleman in his report for 1896:

> In previous reports it has been my duty to draw attention to and strongly comment upon insanitary conditions of the most serious character but with little or no result. It is therefore an encouraging experience to find that the new administration evince a more responsible and comprehensive sense of the duties of their position, so that I have no hesitation is stating that the sanitary reform now being carried out will favourably compare with that of other neighbouring districts *(Dr Coleman 1896: 3).*

The first meeting of Hemsworth Rural District Council took place on 3rd January 1895 and a deputation from South Kirkby attended to present the case for more representation for that township due to its rapidly increasing population. It was agreed to spend £250 on drainage/sewerage in South Kirkby, but the request for further representation was turned down six months later on the grounds of insufficient reasons being advanced (*Hemsworth RDC, Sanitary Committee Minutes 1895: 72).*

At a meeting in November 1895 the committee considered a letter from Mr Theaker, clerk of the South Kirkby Parish Council, requesting public scavenging for the township. It was proposed that the clerk should advertise for tenders for the removal of house refuse and make enquiries regarding a suitable place its tipping of this *(Hemsworth RDC, Sanitary Committee Minutes 1895: 85).* Effective scavenging was of vital importance in the prevention of diseases caused by an insanitary environment. As Dr Newsholme stated in November 1899, 'Towns with the most perfect scavenging arrangements have the least epidemic diarrhoea' *(Newsholme, quoted in McLeary 1933: 26).* Newsholme went on to describe diarrhoea as a filth disease and that, together with poor scavenging, was the chief source of contamination in the home.

At meetings of the Sanitary Committee of Hemsworth RDC during 1896 the question of scavenging in South Kirkby arose again as there had been complaints regarding its effectiveness in some parts of the township. At a meeting in April of that year it was emphasised that it was the duty of scavengers to clear away all they found in ashpits *(Hemsworth RDC, Sanitary Committee Minutes 1896: 85).*

By the time of Dr Wiltshire's annual report for 1913 it would appear that the situation with regard to scavenging appears to have been taken care of by the council. Dr Wiltshire stated that 'there is no doubt that this work is much better done by the Council' *(Dr Wiltshire 1914: 4)*, in particular he referred to them using their own men who are under their direct control and supervision.

During a meeting in September 1899 the MoH reported that there had recently been three cases of enteric fever in South Kirkby, one of which was fatal. He stated that he could not be certain as to the cause but suggested the flushing and cleansing of manholes and sewers would improve the situation *(Hemsworth RDC, Sanitary Committee Minutes 1899: 122).* Then, in May 1900, it was reported that water from wells in South Kirkby was not fit

for drinking and that samples were to be taken *(Hemsworth RDC, Sanitary Committee Minutes 1900: 141).*

Despite the improvements carried out to the water supply and sewerage system during the late 1890s, Hemsworth Rural District Council still had to borrow considerably during 1909 in order to improve the sewerage in many of the colliery townships, including South Kirkby. This was of course due to the fact that mining activities continued to grow throughout this period and consequently the population continued its steep rise, putting a continual strain on the water supply and sewerage system.

The IMR was 153 in 1897, yet in his Annual Report Dr Coleman states that it "bears favourable comparison with previous years" *(Dr Coleman,1897: 2).* However, 51 out of the 119 infant deaths occurred during the 3rd quarter of the year, suggesting that diarrhoea was a problem. In this year the IMR for England and Wales was 156. The following year the IMR in Hemsworth was 182, a figure which was only exceeded once, in 1902, when it was 187. There were 137 infant deaths in the district in 1898; 34 were due to diarrhoea (the 3rd quarter of the year again had the highest number of infant deaths – 44 out of 137), 6 from measles; 29 from bronchitis; 4 from pneumonia; one from injuries and 64 from other causes. Dr Coleman remarked:

> In the consideration of these death rates it must be remembered that the great majority of them occur in the houses of miners and labouring classes. They marry young: the annual baby is the result, and only the fittest survive the many diseases of infancy and childhood. The ignorance and inexperience of their parents is so profound that only a merciful providence could provide for that individual survivor *(Dr Coleman, 1898: 3).*

The increase in the IMR in the 1890s was largely the product of increased mortality from diarrhoea diseases during the hot summers in the latter years of that decade. However, even after 1898 the IMR remained high in Hemsworth (153 in 1899, 170 in 1900 and 180 in 1901) reaching a peak of 187 in 1902. During the last decade of the nineteenth century the IMRs for Hemsworth and England & Wales were very similar, but after 1900 the rate for England & Wales began to decline fairly quickly so that by 1902 it was down to 134.

Buchanan states *(1983: 88)* that the studies of both Newman and Newsholme indicate that roughly one third (32-35 per cent) of infant deaths followed wasting and developmental conditions. However, the proportion of total infant deaths from these causes rose from 29 per cent to 36 per cent as the IMR fell from 156.1 to 117.1 between 1896/1900 and 1906/1910. This suggests that the reduction in the IMR depended mainly on a reduction in deaths from causes other than those in the developmental and wasting

group. This suggests that a high IMR was brought about by excessive mortality from diarrhoea and respiratory diseases.

Around two thirds of all infant mortality in England and Wales resulted from either developmental and wasting conditions, diarrhoea or respiratory diseases:

63% in 1905 according to Newman and

69% in 1908 according to Newsholme *(Buchanan1983: 192).*

5.4 The contribution of Diarrhoea and Enteritis to the IMR in Hemsworth

Buchanan states that Tatham's work for the inter-departmental committee on physical deterioration suggested that infant diarrhoea mortality was the principal reason for the maintenance of high levels of IMR in most of the urbanised counties of England and Wales between 1873/7 and 1892/1902. However, it was only in epidemic years that the infant diarrhoea mortality exceeded that from the developmental and wasting group. Also most deaths from this latter group occurred during the first three months after birth *(quoted in Buchanan 1983: 90).*

Newsholme maintained that the difference between the highest and lowest county IMRs represented the potential for a reduction in the IMR in areas where the rate was excessive. Therefore the bulk of any reduction in IMR would follow a reduction in deaths which occurred after three months, ie. from diarrhoea.

Buchanan maintains that many of the youngest infants who died were not viable given the environmental conditions and prevailing medical knowledge which existed at the time;

> It would be impossible to determine ... whether the increased mortality (from atrophy, debility, marasmus and premature birth) among infants of miners is really due to diverse conditions acting on the mother before birth, or to adverse post-natal environment killing off some prematurely born infants who would have survived, either permanently or until after the first month if they had received the care and attention they are likely to receive in the upper and middle classes *Brend 1918 quoted in Buchanan p 94: 211).*

In epidemic years, enteritis, gastritis and diarrhoea were responsible for about one third of infant deaths. The marginal increase in bottle feeding in the second half of the nineteenth century may go some way towards explaining why the IMR did not fall in line with mortality in general *(Buchanan 1983: 91).*

As Buchanan says coal miners were renowned for their high fertility and the accompanying high IMR:

> Coal miners' wives were young at marriage and had large completed families - a mean of 7.0 children for surface workers and 7.7 children for face workers *(Friedlander 40, quoted in Buchanan 1983: 234).*

The environment and sanitation in general were held by Buchanan to be extremely important factors in determining the level of infant mortality, but he believed the issue of house flies was particularly significant. He states that the method of disposal of human excreta was crucial as far as the spread of disease by house flies is concerned. Very few mining communities were provided with sanitation in the form of WCs and not all of those had cisterns, but rather had to be flushed with a bucket. Much colliery housing even as late as 1910 was still served by privy middens and ash closets. Scavenging was therefore of the utmost importance, for if it was not carried out regularly and adequately a breeding ground for flies resulted. In many mining communities scavenging was carried out by farmers and just when regular scavenging was most necessitous (i.e. the late summer months), they were busy with the harvest and therefore did not carry out the scavenging as thoroughly as should have been the case. Buchanan produced tables to show the temperature of the soil 4 feet below the surface during different months in the year in The Rhondda. He argued that the years when soil temperatures were particularly high are those which produced the greatest number of flies and that these correlated with the years of highest IMR. Although there are no such figures available for South Kirkby, or indeed the Hemsworth District, summer infant mortality was at its highest during the hot summers of the 1890s and a high death rate amongst infants in the summer months was usually associated with diarrhoea and enteritis.

Morgan is in broad agreement with Buchanan as to the role of house flies in diarrhoeal diseases in general and infant mortality in particular. However, his theory, based on his research on Preston, is that it was the steep increase in the number of horses during the 1880s and 1890s in urban areas, and hence accumulations of manure, which were responsible for an increased number of flies. Morgan maintains that it is this growth in the number of horses which was responsible for the rise in the IMR in urban areas during the 1890s *(Morgan 2002: 126).* His conclusion appears to suggest that the explanation for the rising levels of urban infant mortality at the end of the nineteenth century lies in the increased prosperity of towns during this period and hence the number of tradesmen, shopkeepers and so forth who all required transport. This does not seem to have been the case in South Kirkby. In chapter 2, table 2.18 shows us that the number of heads of household who were tradesmen (for example, grocers, butchers, shoemakers) increased

from 19 at the 1891 census to 31 at the 1901 census. However, over the same period the population of South Kirkby rose from 1,444 to 2,916 and it does not therefore seem that the rise in the number of tradesmen kept pace with the growth in population. Neither was there an increase in the number of those giving their occupation as carter or carrier over the period. It therefore seems that the explanation for any increase in the number of house-flies in South Kirkby during this period lie with the poor sanitary environment in general (see chapter 6) combined with the series of unusually hot, dry summers.

Table 5.1: Earth temperature (°F) and totals of deaths from diarrhoea in The Rhondda in 1899, 1901, 1902 and 1905

1899 week ending	**5/8**	**12/8**	**19/8**	**26/8**	**2/9**	**9/9**
Temp °F (max)	64	64	65	65	66	64
Diarrhoea Deaths	10	33	43	75	62	47
1901 week ending	**28/7**	**4/8**	**11/8**	**18/8**	**25/8**	**1/9**
Temp °F (max)	62	62	61	60	60	59
Diarrhoea Deaths	34	32	30	24	16	24
1902 week ending	**28/7**	**4/8**	**11/8**	**18/8**	**25/8**	**1/9**
Temp °F (max)	57	56	57	57	57	59
Diarrhoea Deaths	3	1	1	7	4	3
1905 week ending	**5/8**	**12/8**	**19/8**	**26/8**	**2/9**	**9/9**
Temp °F (max)	59	59	58	57	57	57
Diarrhoea Deaths	31	20	20	22	12	7

Source: Buchanan (Table 6.7),1983

Table 5.1 shows a clear connection between the soil temperature and the number of deaths from diarrhoea (it is assumed that this is total deaths and not just infant deaths - Buchanan is not quite clear on this point). 1899 appears to have been the warmest of the summers for which Buchanan presented the temperatures and the number of deaths from diarrhoea, both being at their highest. By contrast, the temperatures in 1902 were low as were the number of diarrhoea deaths. 1902 was a cool summer all over the country and Dr G E Coleman, MoH for Hemsworth from 1883-1906 writes:

> The absence of prolonged hot weather relieved us of the usual diarrhoeal fatality among infants, but unfortunately this was more than counterbalanced by the excessive number of deaths from infantile bronchitis attributable in some measure to the reverse climatic conditions assisted by want of due care on the part of the mother *(Dr Coleman, quoted in WRCC Annual MoH report for 1902).*

Ironically however, it was pointed out in the West Riding County Council MoH Annual Report for that year that the rainfall for the year was, in fact, two inches below the average for the preceding 34 years and days of frost were also below average.

In the same year the Annual MoH report for the WRCC stated:

> It is significant that in those districts producing the most children there usually exists the greatest ignorance or carelessness as to the rearing of infants so that the juvenile death rate is often abnormally high (*Annual MoH report for WRCC 1902: 3).*

This study would also appear to bear out Newsholme's findings on breast feeding as the MoH had access to reports of health visitors from the early years of the twentieth century. Buchanan paid special attention to the role of house flies in the spread of disease, as we have seen, especially diarrhoea in infants and produced figures which would appear to confirm that those years when the temperature of the sub-soil was warmest during the summer months were those years when infant mortality was at its worst *(see above).*

Table 5.2 shows the percentage of infant deaths which took place in each quarter enabling a more straightforward comparison over time. It was expected *(Williams 1992: 72 and Quarterly Returns of Registrar General)* that the quarter with the highest percentage of infant deaths in South Kirkby would be the third quarter (July-September), particularly from 1891 onwards; the reason being deaths from diarrhoea and enteritis arising from overcrowded living conditions with poor sanitary facilities combined with the frequent hot and dry summers.

Table 5.2: Percentages of infant deaths according to season

	1st Quarter		2nd Quarter		3rd Quarter		4th Quarter	
	SK	Ag T	SK	Ag T	SK	Ag T	SK	Ag T
	%	%	%	%	%	%	%	%
1871-1880	25	25	25	33	25	20	25	22
1881-1890	20	23	20	17	30	28	30	32
1891-1900	20	27	17	19	32	19	31	35
1901-1910	22	25	19	21	25	25	34	29
Mean %	21.8	25	20.3	22.5	28	23	30	29.5

Source: Hemsworth Vaccination Birth Registers, Parish Burial Registers and Moorthorpe Cemetery records

SK = South Kirkby: Ag T = Agricultural Townships

Although the percentage of infant deaths was marginally higher in the third quarter months during the 1890s (32 per cent against 31 per cent for the fourth quarter), this was no longer the case during the period 1901-1910 when the fourth quarter deaths were higher. Over the whole period almost 60 per cent of infant deaths in South Kirkby occurred during the second half of the year. In the agricultural townships, on the other hand, apart from

during the 1870s the fourth quarter consistently had the highest percentage of infant deaths. Overall 54.5 per cent in infant deaths took place during the autumn and winter months (ie. October to March) in the agricultural townships. Although some studies such as that of Thornton & Olsen in Montreal *(Thornton & Olson 2001: 95-135)*, have chosen to divide the quarters of the year up differently, thus having June-August for the summer quarter, it was decided to use the same system as that used by the Registrar General for returns of births and deaths, particularly as soil temperatures generally remained higher in September than in June and conditions were thus more conducive to epidemics of diarrhoeal diseases.

The 36 recorded infant deaths occurring during the third quarter in South Kirkby during the 1890s were analysed for age at death and deaths of siblings. Twenty-nine of the thirty-six fathers/parents were recorded as coal miners There was one was farmer, one butcher, one railway platelayer, one sawyer. Two were domestic servants and one was a single woman of no occupation.

Table 5.3: Age at which infants died during July-September 1891-1900

Age in days at Death	Number of deaths
Less than 30	8
31-90	6
91-180	10
181 or over	12
Total	36

Source: Vaccination Birth Registers for Hemsworth District and South Kirkby Parish Burials records

From Table 5.3 we can see that one third of the 36 infant deaths occurring during the summer months were of babies over 181 days old (6 months). Clearly those babies who were likely to have been weaned or were in the process of being weaned were more at risk during the warmer months than babies under the age of three months who were still likely to be wholly breastfed. This is broadly in line with tables shown in Newman (*1906: 287-89)* which showed that infant deaths from epidemic diarrhoea peaked at between 30 and 38 weeks of age. Breschi and Bacci also emphasise the importance of the month of birth in conjunction with the timing of weaning in determining diarrhoea deaths during the summer months *(Breschi and Bacci 1994: 159).* Moreover, in some of those deaths which occurred under the age of one month there seems to be a familial pattern. For example, the daughter of Joseph Horrabin died on 24 August 1896 aged 15 days and another daughter died on 24 August 1898 aged 22 days. The son of James Wildman died in August 1899 aged 11 days and in 1880s a daughter had died aged 2 days and a son

aged 75 days. In both these cases it is clear that there were factors, such as prematurity or genetic causes likely to have been involved. But we cannot ascertain this from the vaccination registers alone. A similar pattern also occurred in slightly older infants such as those of Abraham Gething whose daughter died aged 43 days in August 1896. Two further daughters died in February 1902 aged 41 days and in October 1903 aged 53 days. Here again it would seem that there may have been exogenous factors making the infants susceptible to infections. Three of the babies who died in the summer months were twins (non related), two of whom died aged 7 and 9 months. Clearly as twins they probably had low birth weights and were therefore less likely to thrive. Such infants would be particularly susceptible to death from diarrhoea.

In babies still older there are also similar cases. For example, the daughter of Richard Brookfield died aged 177 days on 20 September 1895, followed by a further daughter aged 121 days on 25 September 1898. Likewise the daughter of Joseph Jones died on 3 September 1895 aged 230 days. Two years previously a son had died aged 179 days in May. Although we cannot be certain, it may be possible that hygiene in some families was not as good as in others and this would have an impact once the infant was weaned and drinking cow's milk.

In the cases where weaning and contaminated milk was a factor it is not known whether or not the milk was pure before it came into the home or whether it was contaminated by the unsanitary conditions within the home itself. Neither is it known whether cow's milk or condensed milk was fed to the babies.

Although the deaths were more evenly spread across the age groups for the infants who died during the October-December quarter of the same decade, it was in the group aged over 181 days that the most deaths occurred. Some of the deaths in this quarter occurred in clusters. For example between 8 and 19 December 1893 there were four infant deaths. In the following year there were six infant deaths between 2 November and 25 December, although three of these occurred in babies of less than one week of age. In December 1896, once again, there were five infant deaths between 19 November and 12 December, two of these babies being just one month short of their first birthday. However, on investigating these 'clusters' further, there was no mention in either the relevant MoH reports or entries in the Sanitary Authority minutes of outbreaks of measles or scarlet fever which would account for them. It therefore seems probable that these were viral infections, which in the damp and poorly ventilated conditions in which many families lived, turned to respiratory infections such as bronchitis and pneumonia which would be

particularly harmful to babies, especially those who were no longer breast-fed. For the quarter January-March more than two-thirds of the deaths occurred in infants under the age of 90 days (three months), clearly showing how susceptible to the cold weather were those babies who were possibly premature, had low birth weights and possibly congenital defects.

Newman *(1905: 49)* stated that respiratory disease was related to climate and also to urban life. He noted that mortality rates from respiratory diseases in urban areas were as much as 80 per cent in excess of rural rates. Although he was talking about first quarter deaths it is probable that the same would apply to the high percentage of fourth quarter infant deaths in South Kirkby.

In the agricultural villages, on the other hand, there were only seven infant deaths during the July-September quarter in the decade 1891-1900. Four of these seven were of infants less than one week old and only one was over six months old. The third quarter (equal with the second quarter) had the lowest number of infant deaths in the agricultural villages during the 1890s despite the hot summers. That infants in these townships appear to have been unaffected by the hot summers of that decade whilst those in South Kirkby demonstrably were, which indicates the impact of rapid, unplanned urbanisation of a previously healthy area.

Table 5.4: Ages of infants who died in South Kirkby and in the agricultural townships during the decade 1891-1900

Age at death	South Kirkby	Agricultural townships
Less than 7 days	20	22
8-30 days	13	5
31-90 days	24	-
91-180 days	25	4
Over 181 days	28	5
Total	110	36

Source: Hemsworth Vaccination Registers and Parish Burial Registers for South Kirkby, Badsworth, Kirk Smeaton, Skelbrooke.

Table 5.4 also demonstrates that infants in the agricultural townships were not subject to the same environmental factors as those in South Kirkby. Only one quarter of the infant deaths in these villages during the decade 1890-1900 occurred in babies over the age of three months, whilst a very high proportion died within the perinatal period. The IMR was decreasing by this time in the agricultural townships and this table shows that the battle against environmental factors was being won there. There would, however, seem to be a

disproportionately high number of premature births, possibly the result of poorly nourished mothers there. However, the number of deaths of infants aged under 7 days is distorted by the deaths of six babies, two sets of triplets all in one family between November 1899 and September 1900. Whatever the reason for the high endogenous death rate, once infants were over the age of one month in these townships they were much less likely to die than were those in South Kirkby, despite the fact that the housing in the agricultural townships was generally older and even more poorly ventilated than the housing in the colliery town. The sanitary provision was also more primitive *(Sanitary Report for Hemswoth 1921: 5).* This clearly demonstrates the points made by Szreter regarding the effects of rapid economic growth, not just in the large cities, but in smaller towns such as South Kirkby. Szreter maintains that this rapid, unplanned economic growth led to the 4 'D's which were:

i Disruption – environmental, idealogical, social, administrative and political,
ii Deprivation – resulting from how the town copes with the disruption,
iii Disease – as a result of the deprivation,
iv Death
(Szreter 1997)

Szreter stated that this could occur in small towns such as South Kirkby if there was a rapid urbanisation and industrialisation *(Szreter 1997).* This is precisely what happened in South Kirkby which had exactly the rapid, unplanned economic growth which that was referring to. The infrastructure with regard to water supply, housing, drainage and sewerage was not in place and took a long time to catch up with the growth in population.

The Sanitary Report for Hemsworth of 1920 was part of a series produced by the West Riding County Council which looked at sanitary and environmental conditions in the different districts of the county. Amongst other things it commented on some of the types of sanitary provision in the various townships. For example, the village of Badsworth was still largely served by privy middens with a few pail closets. In the mining township of South Kirkby where most of the housing was of recent construction, there were still 1200 privy middens and only 400 WCs. Bearing in mind that this was the situation in 1920 and presumably an improvement upon previous provision, then it is likely that sanitary facilities would have been far worse in the period 1890-1910 when the IMR was at its worst in the township. *(Sanitary Report for Hemsworth 1921: 2-23,).*

5.5 Conclusion

In the introduction to this thesis it was hypothesised that one of the main reasons for the rise in the IMR in South Kirkby was the deterioration in the environment as a result of unplanned growth in the population. Chapter 2 shows how the population increased hand in hand with the expansion of coal mining. In the agricultural townships, on the other hand, the population remained stable or began to fall and there was no change in the environment. The findings from the Hemsworth District certainly seem to confirm the assertion of Buchanan and Morgan that the environment was responsible for the persistently high IMR in towns during the 1890s. Thus the poor sanitary environment, i.e. inadequate scavenging, drainage and sewerage combined with the unusually hot, dry summers to produce ideal breeding conditions for house-flies which Niven had proven to be carriers of diarrhoea and enteritis *(Niven 1910: 166).* There is no evidence of an enormous increase in the number of horses in South Kirkby such as that described by Morgan in Preston *(Morgan 2002: 101-129).* However, it seems likely that there would have been some increase even if only to take some of the supplies to the colliery, although the coal itself was transported away by rail apart from that which was used locally for domestic consumption. The IMR in South Kirkby began to increase once the colliery opened and the township began its rapid growth and urbanisation. At the same time in those townships which remained purely agricultural the IMR remained consistently low (*see Chapter 4).* The effects of an unhealthy environment can be seen clearly in Faith Street, one of the new streets built to serve the colliers and their families.

The findings presented in this chapter are in line with the findings of Woods *(2000: 649)* when he said: 'It was not necessary for the urban environment to deteriorate in order for mortality decline to be retarded; rapid and substantial urbanisation was sufficient'.

With regard to seasonality, we have seen that infant deaths were rarely at their highest in the third quarter (July to September) of the year, when diarrhoea would be a factor. Atmospheric pollution therefore had a huge part to play in infant mortality. As we have seen, over the period as a whole, it was the fourth quarter of the year (October – December) when the highest proportion of infant deaths occurred both in South Kirkby and in the agricultural townships where there was also a large number of deaths in the first quarter of the year. Smoky atmospheres in mining communities were particularly conducive to respiratory disease. Because there was a supply of cheap and abundant domestic fuel this led to a high consumption of coal, throughout the whole year, not just in the winter and this was damaging to infants *(Buchanan 1983: 52).* Although this would not have been the case in the agricultural townships, the cottages there were generally

older and therefore did not conform to any of the bye-laws. Hence they were usually poorly ventilated and damp *(see Chapter 2)* producing ideal conditions for respiratory infections to take hold in young babies. Nevertheless, the IMR remained low there, probably because the scattered nature of the population did not allow for rapid transmission of infectious diseases.

Taking all these factors into account it is felt by the author that the poor environment in South Kirkby resulting from the rapid urbanisation was the single most important factor in the rise of the IMR there during the 1890s. This was also the main reason why the decline in the IMR began later (from about 1905 onwards) in the Hemsworth district than in most other parts of England and Wales. The effects of this rapid urbanisation can be seen by comparing the change in the IMR in South Kirkby compared to that of the agricultural townships. Figure 4.1 in Chapter 4 shows very clearly the difference in the IMR between South Kirkby and the townships which remained agricultural. It also highlights the fact that the IMR in the agricultural townships began to fall in the late 1890s in line with the rest of England and Wales.

It is also felt that the nature of the mining communities and the inhabitants was also responsible for the high IMR in South Kirkby and Hemsworth district. We have seen that in colliery townships such as South Kirkby, mining was virtually the only employment available and as a result the population was homogenous in nature. This had the effect of ensuring that miners' wives only mixed with other miners' wives or their sisters and mothers who were also likely to be miners' wives. Any advice they received on baby and child care was therefore likely to have been handed down from generation to generation with few new ideas permeating their community. After 1910 the IMR in South Kirkby began to decline more steeply and this may, in part, have been due to the appointment of a health visitor who would be able to offer advice and give mothers up to date information on the best methods of infant feeding and hygiene.

The next chapter will form a micro-study of this street, which had a poor reputation even at the time. This street, although consisting of only 60 houses (until 1914) in a semi-rural setting had one of the highest infant death rates in South Kirkby. It was also situated in close proximity to the sewage works in the town, which was the subject of much discussion by the Sanitary Committee of Hemsworth Rural District Council in the final years of the nineteenth century. The sewage works was said to be dilapidated, badly managed and the source of possible disease.

Because Faith Street had only 60 houses, the families living there and the infant deaths which occurred can be examined in close detail. The micro study of this street in Chapter 6 will therefore help to demonstrate and confirm that the factors discussed in this chapter were largely responsible for the increase in the IMR in South Kirkby.

By 1911 the infant mortality rate in Hemsworth district was beginning to fall (although 1911 itself saw a sharp rise due to the unusually hot summer which extended all over Europe). In 1913 the IMR stood at 137 (a considerable reduction since the 1890s and early 1900s) whilst that for England and Wales was 109. Dr Wiltshire clearly felt that there was room for further improvement when he said that it ought to be lower. He summed up the major ways by which it could be brought down and which could be applied to many urban areas at the time, when he stated:

> I feel sure the problem can best be met by appointing more health visitors to visit and instruct the mothers, by gradually getting rid of the present unsatisfactory privy middens, and by the introduction of the water closet system *(Dr Wiltshire 1914: 2).*

LINDA MARGARET DAVIES
B.A. (Hons) OPEN – 1995

THE CONQUEST OF INFANT MORTALITY: THE CASE OF HEMSWORTH 1871-1911

THESIS FOR D.PHIL

SOCIAL SCIENCE

SUBMITTED ON
30TH SEPTEMBER 2006

4

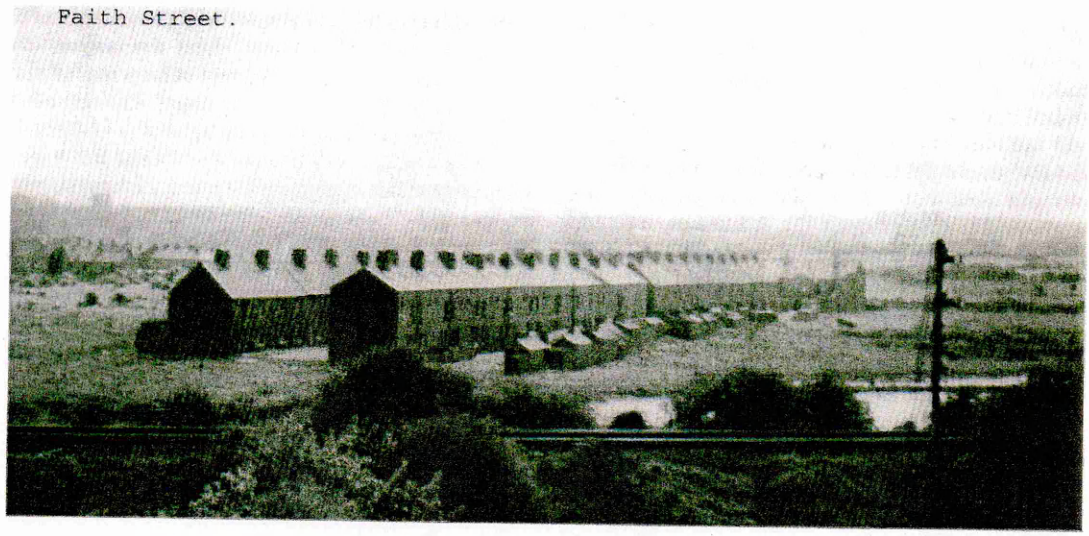
6
FAITH STREET, 'THAT TROUBLESOME PLACE'

This chapter looks in detail at Faith Street, South Kirkby which consistently had one of the highest infant mortality rates in the town in the years 1894-1911. Due to the small numbers involved and the extremely fluid situation arising from the constant change of residents, it is difficult to make any more than simple statistical analyses of the data, such as basic calculations of infant mortality rates. However, the small numbers involved also make detailed family reconstitution more straightforward. This chapter is organised as follows:

1. Introduction and History of Faith Street
2. Residents of Faith Street
3. Infant mortality in Faith Street
4. The Environment in Faith Street

6.1 Introduction and History of Faith Street

Fig 6.1 – Faith Street photographed from the Swinton and Knottingly joint railway line in the 1930s looking west-south-west.



This photograph was taken in the 1940s and shows that by then there were 80 houses. The 20 most recent ones are those nearest to the camera and were even numbers 42-80. The photo shows that these houses have a less steeply pitched roof than the earlier ones, but all the houses on the north side (even numbers) appear to have skylight windows in the attics.

Coal was first produced at South Kirkby colliery in 1883 and the colliery finally closed on 26 March 1988 despite the fact that its miners had held the European productivity record in 1983. Throughout the major period of early expansion of coal mining in South Kirkby, i.e. from about 1885 until 1905, large numbers of new houses had to be built to

accommodate the ever-increasing mining population (Chapter 2). By the 1901 Census the number of houses in South Kirkby had reached 500. In the early 1900s more new terraces of houses were built, housing large numbers of colliers and their families. These were in King Street and, parallel to it, Queen's Terrace, Carlton Terrace and Albert Street *(Vaccination Registers for Hemsworth and Wilkinson 1979: 42).*

Like many of the other terraces of houses built in the 1880s and 1890s to accommodate the colliers, Faith Street is situated just off Carr Lane, between the town centre and South Kirkby Colliery. According to records in the Register of Deeds for the West Riding of Yorkshire, Mr G E Hoey built the original 60 houses in Faith Street in 1894. However, by 1908 there were three owners of the properties. These were Mr John Harvey, Mr Sutherland and Mr Charlesworth.

During the period 1894 to March 1901 births in Faith Street accounted for 18.2 per cent of all births in South Kirkby. By 1906 to 1911 this figure had fallen to 8 per cent as a significant quantity of new housing had been built for the colliery workers and their families elsewhere in the town. Thus by 1910 the majority of births were taking place in, for example, King Street, Carlton Terrace and the new terraces in Moorthorpe.

Little of this early colliery housing has survived to the twenty-first century. Arthur Street and Emily Street were knocked down in 1967 whilst King Street and Queen's Terrace survived for another decade to be demolished in 1976/77. It is believed that Faith Street itself was demolished in the late 1960s/early 1970s.

Aaron Wilkinson, author of *A History of South Kirkby* was born in South Elmsall, but following the family's eviction due to his father's involvement in the 1907 strike at nearby Frickley colliery, he states that 'the family found lodgings in that troublesome place "Faith Street". Wilkinson asserts that Faith Street's notoriety was largely caused by the behaviour of the 'pit sinkers' who lodged there. They were not local men, but moved from project to project, meaning that they had no settled home and were therefore inclined to be 'a rough lot' *(Wilkinson 1979: 115).* Also on Carr Lane, but nearer to the centre of the village stands a public house called 'The Traveller's Inn' and Wilkinson asserts that the sinkers regularly called there in the evening after work for a pint or two. This inevitably led to confrontation with the families of the miners on Faith Street who did not care for being woken in the early hours by noisy, brawling bunches of pit sinkers. Wilkinson says that the situation became worse when the sinkers tried to force their attention on to some of the women in Carr Lane and more trouble ensured. In 1903 extra police had to be drafted

into the village with special attention being given to Carr Lane in general and Faith Street in particular. Clearly, Faith Street, in the early 1900s was not an ideal place to bring up children. It is felt by some of the older residents of present day South Kirkby that Faith Street was originally built to accommodate workers at Frickley colliery one and a half miles away just to the south, particularly those involved in sinking the pit which was in fact taking place in the 1890s and 1900s. If the stories of drunken brawls following visits to the Travellers Rest are accurate then this is possible as the Travellers Rest would be on the way from work at Frickley colliery to home in Faith Street. Only one of the boarders in Faith Street listed in the 1901 CEBs gives his occupation as 'pit sinker'. It would therefore appear that 'coal miner' was sometimes used as a generic term to cover a variety of occupations connected with coal mining.

It is widely acknowledged that infant mortality was often at its highest in mining communities in England and Wales. Whereas the IMR fell for most social groups between 1894 and 1901, amongst miners the figure actually rose from 156 to 165, a 9 per cent rise, although this was followed by a 42 per cent fall between 1901 and 1910. (*Garrett, Reid, Schurer & Szreter, 2001, Table 4.11.2)*. One possible explanation of the increase between 1894 and 1901 is that this period coincided with the movement of many miners from small, rural communities to larger urban environments with high densities of population. However, why did Faith Street have such a high IMR even compared to most of the rest of South Kirkby?

6.2 Residents in Faith Street at 1901 Census

Faith Street in 1901 was predominantly a mining street, a 'young street' and 'male'. 55.7 per cent of the inhabitants of Faith Street were male and 44.3 per cent female.

Table 6.1 - Occupations of Heads of Household in Faith Street in 1901

Occupation	Number	% of total
Coal Miner	53	88
Carter	1	1.7
Colliery labourer	2	3.5
Coal dealer	1	1.7
Greengrocer	1	1.7
Boot repairer	1	1.7
No occupation	1	1.7

Source: 1901 Census Enumerators Books

Table 6.2- Occupations of all persons in work in Faith Street in 1901

Occupation	Number	% of total
Coal miner	101	68.4
Colliery labourer	14	9.4
Pony driver	12	8.1
Others at colliery	3	2.0
Total Colliery	130	87.9
Others*	19	12.1

* Includes cook, housemaids, general servants, greengrocer, farm labourer, commission agent, general labourer, charwoman, carter, cloth weaver, bricklayers, boot repairer, dealer, soldier.
Source: 1901 Census Enumerators books

Almost 90 per cent of the heads of household in Faith Street in 1901 were coal miners according to the 1901 CEBs, and out of the 60 heads of household only four were not involved in coal mining - one being a self-employed carter, one a greengrocer, one a boot repairer and one with no occupation. All the heads of household were male at the time of the 1901 census. In the rest of South Kirkby, however, 6 per cent of enumerated heads of household were female, 70 per cent of them being widows.

Although according to the 1901 census there were 62 boarders (52 of them male) living in Faith Street at that time, a detailed examination of the 1901 census enumerator's books does not reveal any of them giving his occupation as 'pit sinker' and one must therefore assume that the term 'coal miner' included a number who were, in fact, 'pit sinkers'. These boarders were spread throughout 27 of the 60 houses in March 1901.

Table 6.3 - Occupations of boarders in Faith Street in 1901

Occupation	Number	% of total
Coal Miner	35	75
Colliery labourer	5	14.5
Pony driver (at colliery)	1	2.1
Colliery blacksmith	1	2.1
Bricklayer	2	4.2
Commission agent	1	2.1

Source: 1901 Census Enumerators Books

Table 6.3 shows that in total 93.4 per cent of male boarders in Faith Street were employed directly in coal mining, clearly indicating the importance of coal mining in the growth of the town.

63 per cent of the male boarders over the age of 16 were single, 26 per cent were married (one third of these men were living with their wives in Faith St) and the remaining 11 per cent were widowers.

At the time of the 1901 census there was at least one boarder living in 27 of the 60 houses in Faith Street. Eighteen houses had two or more boarders, eight had three or more, four had four or more, one had five boarders and one six. However, it is difficult to correlate the numbers of boarders with infant deaths, partly because the whole situation was so fluid - many boarders and/or tenants only remaining in the same houses for a matter of weeks. The two houses which had five and six boarders did not have an infant death throughout the whole period of study. However, as the census produces only a 'snapshot' of one particular day it is unlikely that these houses had the same number of boarders throughout the period. The highest number of infant deaths occurred at number 18 where there was just one boarder. However, deaths occurred in four different families. There were also four infant deaths at number 5, but in this case only one couple was involved. At the time of the 1901 census they were boarders. They continued to live in the same house throughout the entire period, but whether they as boarders or tenants it is impossible to say.

As well as being a predominantly 'coal mining' street, Faith Street was also a 'young street'. 60 per cent of the heads of household were 40 years or under with the mean age being 36.3 years. Only six (10 per cent) heads of household were aged over 50 years of age (Table 6.4).

Table 6.4 - Ages of Heads of Household in Faith Street in 1901

Age	Number
Up to 25	4
26-30	11
31-35	9
36-40	16
41-45	5
46-50	9
51-55	2
56-60	2
Over 60 yrs	2

Source: 1901 Census Enumerator's Book - South Kirkby

At the time of the 1901 census there were 409 inhabitants in the sixty houses in Faith Street, an average of 6.8 inhabitants per house. Also, according to the 1901 CEBs, the houses in Faith Street had at least five rooms. Unfortunately , the dimensions of these rooms are not known. One row of cottages (Watkins cottages) still remains in Carr Lane (just to the south of Faith Street). Again, according to the 1901 census these cottages had at least five rooms, but as far as can be ascertained from the outside (one of these cottages was empty and in the process of renovation in March 2002), the sitting room, or 'front room' measured no more than 11 feet x 11 feet. The kitchen appeared to measure approximately 11 feet x 9 feet with a further room to the rear of this (apparently used as a bath room in 2002 measuring approximately 8 feet x 7 feet). Judging by the number of windows it is possible to conclude that there were no more than two rooms upstairs, situated over the sitting room and kitchen. Apparently the houses in Faith Street consisted of two rooms downstairs and two rooms upstairs, each room being approximately 13-14 feet square, some with an attic (*South Kirkby Family & Community History Society 2002 - although whether this is an accurate estimate of size is difficult as the information comes from the recollection of someone who lived there in the 1940s. This person also stated that there was a privy for each house, but from reports in the minutes of the sanitary committee this would not appear to have been the case in the 1900s [p).* However, if the information given in the CEBs for 1901 is correct then all the houses in Faith Street must have had an attic in order to have had at least five rooms. Although 6.8 was the mean number of persons per house in a number of cases there were many more than this. There were three households with 11 individuals, for example, Eleazor Sanders aged 35 lived with his 36 year old wife and nine children aged between 15 and 1 year old, in number 14 (a further three children were born to this couple, two of whom died before reaching their first birthdays). There were also four households of ten persons and five consisting of nine persons. Thus, there were 129 people living in these thirteen houses. On the other hand, there were three households of just two individuals, all couples (to middle aged). The third couple had a child in 1901.

The following lists the family members of the households containing 11 individuals as well as one of the households of 10 individuals. These show the varied ways in which such large households were made up. Only one of these was a nuclear family consisting of just parents and children, the others containing members of the extended family. Other households of 9 and 10 individuals not listed here, but see appendix 6.1, consisted of two families, one of the tenant and another the boarder and family.

Household living at number 7 Faith Street in 1901

Benjamin Sydney	Head	M	31	Coal miner
Eliza Sydney	W	F	27	
Alice Sydney	D	F	7	Scholar
Albert Sydney	S	M	2	
John Simpson	FiL	M	52	Coke Burner
Willie Simpson	BiL	M	17	Coal Miner bg
Harriet Simpson	SiL	F	19	Cloth Weaver
Horace Simpson	BiL	M	12	Scholar
Annie Simpson	SiL	F	15	
Louisa Simpson	SiL	F	10	Scholar
John Simpson	BiL	M	6	Scholar

Household living at number 8 Faith Street in 1901

Mary A Turton	Head	F	47	
Samuel Turton	S	M	19	Colliery labourer
George Turton	S	M	18	Colliery labourer
James Turnton	S	M	14	Pony driver bg
Henrietta Turton	D	F	12	Scholar
Wilfred	S	M	9	Scholar
Maria Turton	D	F	7	Scholar
James Wildman	SiL	M	30	Coal Miner bg
Elizabeth Wildman	D	F	22	
Ethel May Wildman	GD	F	10m	

Elizabeth Wildman gave birth to a further 4 children between July 1902 and June 1910 – all born at Milthrope's Row

Both George who was 18 at the time of the census and Henrietta who was 12 went on to have children of their own within the next 10 years and both still giving address as 18 Faith Street. Henrietta was only 17 years old at time (spring 1906)

Household living at number 14 Faith Street in 1901

Eleazor Sanders	Head	M	35	Coal Miner bg
Alice Sanders	W	F	36	
Ellen Sanders	D	F	15	
William Sanders	S	M	14	Pony driver bg
Hannah Sanders	D	F	11	Scholar
Thomas Sanders	S	M	10	Scholar
Susan Sanders	D	F	8	Scholar
Mary A Sanders	D	F	7	Scholar
John A Sanders	S	M	6	Scholar
Samuel Sanders	S	M	4	
Martha J Sanders	D	F	1	

Son Ambrose born 24.02.1902, died 24.09.1902. daughter Agnes buried aged 2 months on 24.09.1904, son Michael born 16.12.1908, vaccinated 18.02.1909.

Household living at number 53 Faith Street in 1901

Henry Sharman	Head	M	36	Coal miner bg
Maria Sharman	W	F	42	
Ernest Sharman	S	M	15	Pony driver bg
Sarah A Sharman	D	F	12	Scholar
Mary Sharman	D	F	10	Scholar
Charles Sharman	S	M	8	Scholar
Herbert Sharman	S	M	4	
Ethel Sharman	D	F	8m	
Emma Marples	D	F	27	Charwoman
Thomas A Marples	GS	M	6	Scholar
Elizabeth Marples	GD	F	2	

Key to abbreviations in above list

Column headed 'x' shows relationship to head as follows.

W – wife, S – son, D – daughter, Boa – boarder, GS – grandson, GD – grand-daughter, FiL – father-in-law, F- bather, B – brother, SS – stepson, BiL – brother-in-law, SiL – sister-in-law, Nc – niece, nep – nephew

In occupation column, bg – below ground, ag – above ground

6.3 Infant Mortality in Faith Street

Table 6.5 - Cohort Analysis of Infant Mortality in Faith Street and South Kirkby

Period	**IMR**		
	Faith Street	**South Kirkby #**	**Hemsworth Union**
April 1894-March 1901	250	170	157*
April 1901-December 1905	205	190	160**
1906 - 1910	218	147	
1911	400	191	

Source: Hemsworth Vaccination Registers 1894-1911, South Kirkby Parish Registers of Baptisms, Moorthorpe Cemetery records, Registrar General's Quarterly Returns

*1894-1900 ** 1901 - 1905 # excluding Faith St

Table 6.5 shows the infant mortality rates for Faith Street and South Kirkby as a whole (including Faith Street) during different periods. All the infant mortality rates shown for Faith Street and South Kirkby are based on cohort analysis, whilst those for Hemsworth Union are conventional IMRs based on the Quarterly returns of the Registrar General. It is noticeable that the IMR was considerably higher in 1911 in both Faith Street and South Kirkby. 1911 was a particularly hot summer right across Europe which led to an increase

in the IMR due to high numbers of diarrhoea deaths for that year. This was set against a background of a generally falling IMR.

What then were the factors behind these high rates of infant mortality in Faith Street as compared with South Kirkby as a whole? There is no evidence from MoH (Medical Officer of Health) reports or elsewhere that sanitation in Faith Street was any worse than in the rest of South Kirkby. In fact, South Kirkby was one of the first townships within the Hemsworth district to be connected to mains sewers with the sewage works situated just to the east of Faith Street. Similarly with water supply, Dr Coleman, MoH for Hemsworth, stated in his annual report for 1899 that 202 houses (approximately 45 per cent) in South Kirkby had been connected to the water supply. However, he gives no more detail so it is not known which houses were and which were not.

Between the spring of 1894 when the first residents moved into Faith Street and the census held in March 1901, 104 births are registered in the Vaccination Register of births. The registers for part of 1897/1898, as well as one for part of 1901, one for most of 1904, and those for much of 1905-07 have not survived. The births for these years have been traced using the Parish Baptism Register. These births have been used for examining issues such as individual family sizes. However, they have not been used in any calculations of infant mortality as most of the registers only give date of baptism and not date of birth. It would appear, however, from checking baptisms, where date of birth is known, that most baptisms (90-95 per cent) took place within one month of birth (See Chapter 2). Age is given in the Burial Registers, but to include only those births from the Baptism registers where the infant subsequently died before one year would, of course, produce an IMR which would be too high. Using the data from known infant deaths it is possible to calculate that 95 per cent of deaths are recorded in the Burial Register. Almost all those deaths not included in the Burial Register (but in the Vaccination Register) are those of infants who died within one week of birth. This would appear to be in line with the findings of Galley, Williams and Woods in their assessment of the quality of English ecclesiastical and civil registration *(Galley, Williams, Woods 1995: 170).* Of the 104 infants born in Faith Street between April 1894 and March 1901, 8 moved out of the district *(Hemsworth Vaccination Report Books)* and 24 died before their first birthday, giving an IMR of 250. According to the Burial Register a further 8 died between the first and second birthday. Three further births during these years have been traced using the Register of Baptisms; all three survived infancy, but one died at the age of 15 months. This figure may be a slight under-estimate as at this stage most entries in the Register of

Baptisms recorded address solely as "South Kirkby" and it is therefore impossible to say with any degree of certainty where in South Kirkby these births took place.

From April 1901 to the end of 1905, 44 births in Faith Street are recorded in the vaccination registers. Of these five infants are recorded as having moved away and 9 died before their first birthday, giving an IMR of 205. A further two infants died between 12 and 24 months. According to the Parish Register of Baptisms a further 27 births occurred during this period; seven of these infants died before their first birthday. The low figure in the Vaccination Registers is explained by the missing volumes.

There are 62 births in Faith Street recorded in the vaccination registers between 1906 and 1910. Of these seven moved out of the district in infancy and 12 died before their first birthday, giving an IMR of 218. There are just 10 births recorded in the Vaccination Registers for the first 8 months of 1911 (the book covering September 1911 - April 1912 is not available), and of these 10 births, four infants died before their first birthday. Such a small number clearly does not give a reliable IMR, but the high number of infant deaths relative to births reflects the pattern across Britain, and indeed Europe. A further eleven births for the whole of the period 1906-1911 were noted using the Parish Register of Baptisms.

Thus, out of the 220 births recorded for Faith Street in the Vaccination Register of births between April 1894 and the autumn of 1911 (when the register ceases, the next one being missing) , 49 infants died before their first birthday (with a further 20 moving away), giving an IMR for the whole period of 245. Additionally, out of the 41 further births appearing in the Baptism Registers, twelve died before their first birthday, plus another one aged 15 months. Thus as far as can be reasonably determined a total 261 births took place in Faith Street over the whole period. 20 moved away and a total of 61 infants died before their first birthday. This gives an IMR for the whole period of 253, but because of possible problems with the Parish Registers, as outlined above, the IMR derived solely from the Vaccination Registers of 245 infant deaths per thousand live births is believed to be more accurate.

- **Parity, Family size and other maternal influences**

The average age at the birth of the first surviving child of the women living in Faith Street at the time of the 1901 census was 21.1 years. In South Kirkby it was 23.4 years in the case of miners' wives and 23.5 years for the wives of non-miners. However, it is possible that the first child could have been born at an even younger age as it is impossible to

know from the census whether any children had been born prior to the eldest surviving child. Despite this, like is being compared with like (in that the information is extracted from the same source in both instances) and a difference of over two years in the average age at which women had their first child would make a substantial difference to marital fertility and infant and childhood mortality. By the age of 25 the wives in Faith Street had an average of 1.6 living children.

Table 6.6 - To show the average number of living children per woman by age group in Faith Street and the rest of South Kirkby in 1901

Age of woman	Average number of living children - Faith St	Average number of living children - South Kirkby
25 and under	1.6	1.6
26-30	2.7	2.7
31-35	4.9	3.4
36-40	4.7	4.0
41-45	5.5	4.4
46-55	3.8	3.2

Source: 1901 CEBs

These calculations only take into account those children alive at the time of the census and do not include women who were apparently childless. For those women aged 46 and over, the figure may not reflect the actual number of surviving children as some of their children would have already left home. Although the figures are the same for both Faith Street and the rest of South Kirkby for those women aged 30 and under, the women over that age in South Kirkby appear to have had significantly fewer surviving children, perhaps indicating some attempt at limiting family size after that age.

Child bearing continued for many years– 40 per cent of the wives in Faith Street giving birth to at least one child over the age of 40. 8 per cent of the wives appeared to be childless, although here again, the census does not tell us everything. For example, Emma Law, wife of Enoch, lived at no 20 Faith Street, was 33 years of age in 1901, and apparently childless. However, the Vaccination Registers inform us that she gave birth to two sons in 1897 and 1899 neither of whom survived infancy (one of them died aged 359 days). She went on to give birth to a daughter in 1901, followed by a further daughter in 1903 and another son in 1905 - only the first daughter (born 1901) appears to have survived as there is no record of her burial. No further births are recorded after 1905, although the family could have moved. However, she was 38 by the time the last son was born in 1905. Furthermore, we have no means of knowing whether she had given birth to

any other children prior to moving to South Kirkby. That childbearing was an extremely dangerous undertaking for mother as well as child is highlighted by the case of one couple living in Faith Street. At the time of the 1901 census Albert and Sarah Edwards were 53 and 38 years of age respectively and had their 15 year old daughter living with them. In December 1905 when they had moved to a different address in Faith Street and by which time Sarah would have been at least 42 years old a further child was born who lived only 21 days. However, Sarah herself died just 8 days after his birth. In view of this it seems unlikely that their daughter had always been their only child and that there had been other pregnancies ending in either miscarriages, stillbirths or the births of infants who survived for only a short time.

Of the 60 women of child bearing age (16-45 years) living in Faith Street at the time of the 1901 census, 21 had at least one child known to have died before its first birthday. As all the women migrated into South Kirkby it is difficult to know how many more suffered infant deaths, although large intervals in the ages of children as shown in the 1901 census may be indicative of a child who died young, but not necessarily before its first birthday. Again these intervals could have been due to miscarriages and/or stillbirths. Five had at least two children who died, one had three and two had four. Additionally two had children died aged 1-2 years and one who died between two and four years.

None of the married women in Faith Street had any occupation outside the home according to the 1901 census. Although there is no evidence on the subject it seems likely that breast-feeding rates among these women would have been at least in line with the average for working class wives:

> probably 80 per cent of the mothers of infants in wage-earning populations suckle infants partially or entirely... (*Newsholme, First Report, p 54, cited in Woods, Watterson & Woodward 1995: 116)*

The percentage may have been higher because miners' wives did not go out to work, unlike those in the textile districts, for example. However, some of the observed birth intervals do suggest that breast-feeding may not have continued for more than three or four months in some cases. As against this supposition, it has to be said that breast-feeding was not a very certain means of contraception.

A total of 61 infant deaths took place in Faith Street (i.e. 61 deaths pertaining to infants actually born there and not those who moved there after birth). Of these 61 infant deaths, six were the children of single women and three were twins. Of the remaining 52 deaths, 19 occurred in just seven families.

One couple, William and Ada Brown, who lived at no 5 Faith Street, where they were described as 'boarders' in the 1901 census, were 22 and 17 years old at the time of the 1901 census. Between June 1901 and October 1911, there were nine live births (five girls and four boys) to this couple - the average interval between births was 15.5 months, with the shortest interval being 11 months and the longest 21 months. Four of these children (two boys and two girls) died before they were six months old and a fifth died at age 14 months. Throughout this time they continued to live in Faith Street, mainly at no 5, but occasionally at different houses. By the time of the birth of the ninth child in October 1911 the mother would still have been only 27 or 28 years of age, and in all probability may have gone on to give birth to a number of other infants. A further young married couple, William and Emma Simms, lived at no 45 Faith Street at the time of the census and were 23 and 18 years of age. Their first child was also born in June 1901, and by April 1911 a further six children had been born. The average interval between births was 22 months, the shortest space 15 months and the longest 43 months. Presumably a stillbirth or miscarriage occurred during this interval as the second longest interval was just 22 months. Again by the time of the birth of the seventh child in 1911 the mother would have only been 28 years of age and had potentially many more years of childbearing ahead of her. Their children all survived infancy apart from the sixth who died the day before his first birthday in 1910.

Table 6.7: Number of Infant Deaths per Family (excluding illegitimate births)

Number of infant deaths per family	**1**	**2**	**3**	**4**
Brown				X
Carr		X		
Farmery		X		
Law				X
Narey			X	
Newbert		X		
Sanders		X		
23 Other Families	X			

Source:Vaccination Registers for Hemsworth and South Kirkby Parish Burial Register

From the information on parity and age of mothers which is available it appears that parity was of greater significance as a factor in infant mortality than was age of mother. Those infants of $4^{th}/5^{th}$ parity seem to have been most at risk. The average age of the mother whose infants died before the first birthday was 30.8 years. However, in many cases both parity and age of mother were linked. For example, Alice Sanders was 36 at the

1901 census, but gave birth to her tenth child (at least, assuming no miscarriages or still-births) at the age of 37 in 1902 and her eleventh at the age of 39 or 40 in September 1904. Both these babies died, one at seven months and one at two months. The youngest mother whose infant died was 17 years of age and this was also her first child. Only three women whose infant died were aged over 40, and in one of these cases the mother also died eight days after the birth.

It is also evident that those parents who had a child dying in infancy were also more likely to have a child die aged 1 to 2 years. For example, one couple, John and Annie Pickup, living at number 18 Faith Street had just one child, a five year old daughter, according to the census in March 1901, but for four weeks in 1900 had three living children. They had had another daughter born in August 1900 who died aged four weeks in September 1900 and a son born in March 1899 who died in November 1900 just seven weeks after the death of the baby girl. There are no more births to this couple in the Vaccination Register, so as the couple were only 29 and 27 in March 1901 it seems likely they moved away.

Examining what we know of the infants who died, 6.3 per cent appeared to be the first child, 12.5 per cent were, *at least,* the second child, a further 12.5 per cent, *at least,* the third child, 25 per cent at least the fourth child, 15.6 per cent at least the fifth child, 6.3 per cent at least the sixth child and 21.9 per cent at least the seventh or subsequent child. Those children who were the seventh (or later) child came from just four families who all had a history of infant mortality. For example, in one family the seventh, eighth and ninth child all died before reaching their first birthday. In another the tenth and eleventh, and in another the seventh child died as well as the first, fourth and fifth.

Table 6.8 - Age of Infants at Death in Faith Street and South Kirkby 1894-1911

Age	Faith Street	South Kirkby - %
Under 1 week	7 (12%)	76 (16.8%)
7-30 days	11 (18%)	82 (18.1%)
31-90 days	9 (14%)	83 (18.4%)
90 days & over	34 (56%)	211 (46.7%)

Source: Vaccination Registers for Hemsworth District 1894-1911, South Kirkby Parish Registers of Burial, Moorthorpe Cemetery records

Table 6.8 shows that 30 per cent of infant deaths in Faith Street occurred in the neonatal period, and of these, 40 per cent died on the day of birth. On the other hand, in South Kirkby taken as a whole, 34.9 per cent of infant deaths occurred during the neonatal period, only 15 per cent of which took place on the day of birth. This neonatal mortality rate is high for an area with an extremely high IMR, but could be due to the very small

numbers involved. In Faith Street 70 percent of all infant deaths occurred after the neonatal period and were thus largely determined (as would be expected) by the external environment, whereas in South Kirkby as a whole the figure was lower at 65.1 per cent. This clearly shows that the environment in Faith Street was likely to have been particularly conducive to a high level of preventable infant mortality (contemporary medical opinion was that little could be done to prevent most of the neonatal deaths). Six of the infant deaths occurring in infants over 90 days in Faith Street were over nine months of age, and these all occurred during the summer months. It therefore seems likely that these deaths occurred shortly after weaning and were probably due to diarrhoea. For example, in the late summer of 1899 three infants who had all been born in Faith Street in December 1898 died between the ages of eight and nine months.

Of particular note is the fact that, only 5.4 per cent of births (14 births) in Faith Street were to single women, amongst this group infant mortality stood at 462 per thousand live births, despite the fact that many appeared to be living with or close to family members and thus have family support. For example, Emily Gomery gave birth to a daughter in February 1903 at the home of Frederick Gomery (presumably her brother), number 63 Faith Street. However, the child died in the July of the same year. Again Mary Hibbert, a single woman, gave birth to twin girls in June 1899, at the home of John Hibbert (again, presumably her brother), number 25 Faith Street. Although these daughters survived infancy they died at the ages of 19 months (January 1901) and 14 months (August 1900).

- **Seasonality and the IMR in Faith Street**

Table 6.9 - Seasonality of Infant Death in Faith Street compared to South Kirkby in general

Quarter	Faith Street %	South Kirkby %
Jan-March	24.5	23.1
April-June	14.3	17.3
July-Sept	40.8	30.6
Oct-Dec	20.4	29.0

Source: Hemsworth Vaccination Registers 1894-1911, South Kirkby Registers of Burial, Moorthorpe Cemetery records

Although Table 6.9 indicates that the third quarter of the year (i.e. July to September) had the highest percentage of infant deaths in both Faith Street and in the rest of South Kirkby, the figure for the third quarter in Faith Street was much more pronounced than in the town as a whole, suggesting once again that environmental factors were of greater significance in the causes of infant mortality in Faith Street than in South Kirkby as a

whole. The summer quarter was of course the warmest when flies were abundant and disease spread rapidly in the most densely populated areas, particularly when sanitary facilities, paving of yards, water supply, drainage and scavenging were inadequate. Dr Coleman commented in his annual MoH report for 1898, that although new houses were now all built to comply to the bye-laws, the areas surrounding these houses were still extremely hazardous to health, particularly the unpaved yards and roads and open drains.

6,4 Migration into South Kirkby and 'itinerant coal miners'

None of the heads of household in Faith Street at the time of the 1901 census had actually been born in South Kirkby. Slightly under half were born in Yorkshire, with the rest from Staffordshire, Lancashire, Derbyshire, Wales, Gloucestershire, Rutland, Cambridge, Hertfordshire, Worcestershire, Newcastle, Perthshire, Lincolnshire and Birmingham. It will be seen that some of these contained coal mining areas (e.g. Staffordshire, Lancashire, Derbyshire) whilst others did not (e.g. Cambridgeshire, Rutland, Hertfordshire). However, it is also clear from the birthplaces of children given in the 1901 census that few of these heads of household moved to South Kirkby directly from their own place of birth. For example Isaac Wilkinson, a 41 year old miner, of no 12 Faith Street was born in Manchester, as was his wife. Their eldest daughter, aged 18, was born in Derbyshire, the next two children were born in Cheshire, the next two in Shafton (in the Hemsworth district) and the youngest, a baby girl of 5 months, was born in South Kirkby.

Table 10 shows that only 14.5 per cent of the residents of Faith Street were actually born in South Kirkby. The average age of those born in South Kirkby was 3.2 years, the oldest person born there being just 14 years of age. On the other hand, 26.5 per cent of the residents in South Kirkby, excluding Faith Street, were born there, the oldest person being was 82 years of age. By far the largest group of those born outside Yorkshire came from Staffordshire (11.5 per cent of the population of Faith Street). It is also clear that relatively large numbers moved together. There are cases of two or three brothers and their families moving to South Kirkby and living close to each other in Faith Street. For example Albert Newbert, aged 30, lived with his wife and four children at number 37 and Harry Newbert, aged 38, lived with his wife and seven children at number 69. Also Peter Quinn, aged 28, born in Oldham, Lancashire lived with his wife and two children at number 36, while Philip Quinn, also 28 and born in Oldham, Lancashire, lived at number 22 with his wife, three children and father, who was a 56 year old widower born in Ireland. There were also others who had family members living in other parts of South Kirkby.

Appendix 1 lists the places of birth of all the residents of Faith Street on census night 1901. A close examination of the places of birth of some of the children reveals just how much their families had moved before settling in Faith Street. For example the family at number 12 had evidently lived in Derbyshire and Cheshire before moving to South Kirkby. Likewise the family at number 14 had lived in Lincolnshire, various addresses in Yorkshire and County Durham. Table 6.10 clearly shows that migrants came to South Kirkby from every county in England, with the exception of Herefordshire, Suffolk and Westmorland.

Of the 107 infants born in Faith Street before the 1901 census, the parents of 49 per cent were still living in Faith Street at the time of the census, although in two cases the fathers were widowers. A further 17 per cent were still living in South Kirkby in March 1901, but the remaining 34 per cent appear to have moved away, possibly still within the Hemsworth District as both nearby Grimethorpe and Frickley collieries were undergoing rapid expansion in the early years of the century.

Table 6.10: To show Birthplace of all residents of Faith Street and South Kirkby at 1901 census

Birthplace	Number - Faith St	Number - S Kirkby
Barnsley	32 (8.0%)	68 (3%)
Sheffield	10 (2.5%)	26 (1.2%)
Leeds	10 (2.5%)	17 (0.8%)
Hemsworth District	7 (1.7%)	79 (3.5%)
Wakefield	8 (2%)	51 (2.3%)
Pontefract	7 (1.7%)	30 (1.3%)
South Kirkby	58 (14.5%)	591 (26.2%)
Yorkshire - other	127 (27.6)	689 (30.5%)
Yorkshire - Total	259 (63.3%)	1559 (68.6%)
Staffordshire	44 (10.7%)	198 (9.7%)
Lancashire	37 (9%)	59 (2.6%)
Derbyshire	21 (5.1%)	84 (3.7%)
Wales	12 (2.9%)	21 (0.9%)
Lincolnshire	6 (1.5%)	38 (1.7%)
Worcestershire	6 (1.5%)	33 (1.5%)
Co. Durham	1 (0.2%)	30 (1.3%)
Nottinghamshire	3 (o.7%)	46 (2%)
Shropshire	3 (o.7%)	20 (0.9%)
Ireland	1 (0.2%)	10 (0.4%)
Others*	16 (3.9%)	213 (9.4%)

*Includes those Bedfordshire, Buckingham, Cambridgeshire, Cheshire, Cornwall, Cumberland, Devon, Dorset, Essex, Gloucestershire, Hampshire, Hertfordshire, Huntingdonshire, Kent, Leicestershire, Norfolk, Northamptonshire, Northumberland, Oxfordshire, Rutland, Somerset, Surrey, Sussex, Warwickshire, Wiltshire, Jersey, Scotland, America, Australia, 'England', 8 unknown and 2 foreign subjects.
Source: 1901 Census Enumerators Books

It was widely believed by contemporaries that coal miners tended to be itinerant and table 6.10 seems to show that this belief was justified. By way of contrast, the birthplaces of all the residents of five of the agricultural townships at the 1901 census were also examined. This analysis shows that 187 out of the 493 inhabitants (39 per cent) were actually born within the Hemsworth district. A further 209 were born in other parts of Yorkshire (West and East Riding), making a total of 80 per cent Yorkshire born. Nevertheless, there was still a wide variation in birthplace in the inhabitants of the agricultural villages with significant numbers coming from neighbouring counties such as Lincolnshire, Nottinghamshire and Lancashire as well as Switzerland, Mexico and Bermuda. However, only 20 per cent of those living in these five agricultural townships were born outside Yorkshire compared with 38.8 per cent of those in Faith Street, indicating the attraction of the rich coal supplies in South Kirkby and the district as a whole.

It is clear from the birthplaces of many of the miners' children (see Appendix I) that, prior to arriving in South Kirkby, most of the miners had, indeed been itinerant. They had moved between many villages in Yorkshire where there were small, shallow pits which were soon worked out. However, the Barnsley seam was particularly thick in the Hemsworth district and South Kirkby colliery, along with Hemsworth Fitzwilliam, Frickley and Grimethorpe collieries, continued to be worked until the closure programme of the 1980s. There was therefore scope for high earnings at South Kirkby and the pit had no difficulty in attracting miners from all over the country to work the many faces. The population in South Kirkby at the 1901 census was 2,916. According to the 2001 census there were over 8,000 inhabitants there 100 years later. Clearly, as the population had grown considerably, a large proportion of those miners who came to South Kirkby in the 1880s, 1890s and 1900s settled there permanently as work would have been secure there due to the large coal deposits underground. We saw in Chapter 2 (Table 2.6) that males far outnumbered females in Hemsworth district in 1901. However, in 2001 there were 3,971 males in South Kirkby and 4,243 females. These figures clearly show the impact of the pit closure on the sex profile of the population. The family of Bill Wootton, of the South Kirkby Family History Society, who provided some information on the houses in Faith Street, were living there at number 32 in 1901. This family had moved about within West Yorkshire before moving to South Kirkby. Alfred, the husband, was born in Hoyland which is near Barnsley; his wife, Sarah, was born in Barnsley and the children were born in Leeds, Moreton, Wakefield and South Kirkby. Bill himself was born there in the 1930s and lived there with his family until they moved to a different address in South Kirkby some time during the 1940s. He still lives in South Kirkby today. The experience of this

particular family would have been replicated many times by other families and demonstrates how families who had previously been itinerant settled down permanently in South Kirkby.

6.5 The Environment in Faith Street

The minutes of the Sanitary Committee of Hemsworth Rural District Council reveal that the sanitary environment in Faith Street was poor at the turn of the century. On 17th January 1901 Mr Whittam, Inspector of Nuisances, reported that there was insufficient privy accommodation in Faith Street on property belonging to Mr G E Hoey of Barnsley. It was moved that a notice be served on him to provide sufficient privy accommodation.

By December 1901 Mr Hoey had not complied with the request for sufficient privy accommodation for the houses in Faith Street and a further notice was served upon him. The following month Mr Hoey put forward plans for conveniences at Faith Street.

South Kirkby was the first township in the Hemsworth district to have a sewage works and this in itself should have been an advantage for the residents. However, as will be shown below this sewage works was not well maintained or efficient and therefore likely to be detrimental to the health of those living close by.

In November 1897 it was reported that a deputation from the council had inspected South Kirkby sewage works and found it to be inefficient and steps needed to be taken to make the filtration more efficient. The following appeared in the minutes of the Sanitary Committee:

> There was a considerable nuisance caused by their being no flush of water in the stream and the smell was very bad indeed and something ought to be done at once.
>
> 200 loads of soil should be taken out of the filtration area and replaced by a like quantity of cinders to act as a filter.
> *(Minutes of Sanitary Committee of Hemsworth Rural District Council November 1897).*

In April 1902 five boys, Thomas Goodwin and David Walton (pony drivers); Henry Beverley, Enoch Spencer and George Harris (school boys), all resident in Faith Street were caught by police doing damage to grass and a wooden fence at South Kirkby sewage works which was situated close to their homes. The clerk of the Sanitary Committee was instructed to take proceedings against the boys for damage at three-

pence each. This incident is indicative of how near the sewage works were to Faith Street and how easy it was to gain access.

The position of this sewage works, so near to Faith Street, may well have had a detrimental effect on the health of the residents there, particularly infants. On 31st July 1902 the clerk read out a letter from Mr H Maclean Wilson, chief inspector of the West Riding of Yorkshire Rivers' Board. This stated that the sewage works at South Kirkby were unsatisfactory and could not, in his opinion, be made suitable for the work they had to do. He stated that the population had increased and the site was exceedingly unsuitable for a sewage works, being in close proximity to houses and a street by the railway embankment. He suggested that the sewage works be abandoned and sewage carried down to join that of South Elmsall. If this were done then the sewage of Colliery Row, North Elmsall could be dealt with and another pollution of the stream removed. He emphasised that the matter required immediate attention as large numbers of cottages were to be built in the neighbourhood. It was therefore agreed that a deputation be sent to visit Harrogate to view the pumping system at the sewage works there and also to the outfall sites referred to in the letter *(Minutes of Sanitary Committee of Hemsworth Rural District Council July 1902).*

In October the deputation reported on their visit to the sewage works and stated that the one at South Kirkby was not satisfactory and suggested that a small pumping engine be erected and bacteria beds laid down *(Minutes of Sanitary Committee of Hemsworth Rural District Council October 1902).* The following month it was resolved that a deputation visit the sewage works at York to see the sprinkler there. In December the clerk read a letter from the Local Government Board asking for information regarding the improvements to sewage disposal at South Kirkby before a meeting between the Council's engineer and their chief engineering inspector could take place. In February 1903 South Kirkby Parish Council approved the proposed sewage scheme *(Minutes of Sanitary Committee of Hemsworth Rural District Council February 1903).*

It seems likely from the reports on the condition of the sewage works that it would have attracted flies during the summer months and many observers believe that these have a major role to play in the incidence of epidemic diarrhoea and the level of the IMR *(Buchanan 1983: 105).* Buchanan's data confirmed the results of Dr James Niven, MoH for Manchester who proved the connection between house flies and diarrhoea, in part by counting the number of flies caught in traps during the summer months. Niven stated that the flies came 'primarily from collections of horse manure, of domestic refuse, and so

forth' *(Niven 1910: 131-215 quoted in Morgan 2002: 100)*. Morgan maintains that it was the steep growth in the horse population and hence in the amount of manure, that provided a breeding ground for house flies, and that this was the main reason for the persistently high IMR in English urban areas in the 1880s and 1890s. Although there is no evidence of stables (and thus an accumulation of manure) in Faith Street itself – indeed planning permission for a stable was rejected in 1902 *(Minutes of Sanitary Committee of Hemsworth Rural District Council 1902)*, it is extremely probable that numbers of carts would have passed Faith Street on their way up Carr Lane with supplies for the colliery. On the other hand, houseflies did not just breed in horse manure and it was later reported to the committee that Faith Street itself was in a poor sanitary condition. In November 1904 the inspector of nuisances reported that a water course on the north side of the street required cleansing as it was full of rubbish. There was then a dispute as to who was responsible for this. The following year Mr Hoey claimed £16 13s in respect of work done to the drains on his property in Faith Street which he alleged the council was liable for. The Committee directed the clerk to write to Mr Hoey denying any liability. In July 1906 the council received a letter from Mr Hoey regarding the sewers in connection with his property in Faith Street in which he stated that they had not been flushed for some time which had caused them to silt up. He asked the council to attend to it immediately whereupon the clerk was instructed to write to Mr Hoey stating that the council could not comply with his request and that it was his duty to prevent any further nuisance on his property.

In February 1908 Mr Clough, one of the committee members drew attention to the bad state of repair of Faith Street and stated that something ought to be done with a view to putting this street into a proper state of repair. After consideration it was resolved that the clerk be instructed to write to all adjoining owners drawing their attention to the poor state of repair in order that they might put it into proper order and possible avoid any steps to be taken under the Private Street Works Act of 1892. On 23rd July of 1908, and arising out of a recent MoH report, it was resolved that a deputation be sent to visit Faith Street with the surveyor and inspector of nuisances to inspect the drains and the state of the street itself. In September the Chairman reported back on behalf of the deputation to Faith Street that both matters (drains and state of street) required urgent attention. They felt that the best way forward would be to write to the various property owners with a view to meeting and discussing the matter. By the middle of October the three property owners had been contacted and each of them had promised to carry out the necessary work. However, in January 1909 the Sanitary Committee moved to put in force the provision of the Private

Street Works Act in respect of Faith Street as the necessary work had not been done and tenders were requested for relaying the sewer in Faith Street.

In February 1909 the Committee wrote to one of the owners, Mr Charlesworth, stating that they would take action against him unless he carried out the necessary work to the drains. In April that year it was agreed under the Private Street Act that Faith Street be levelled, paved, metalled, flagged, channelled and made good and the expenses incurred by the council be apportioned on the owners abutting on that street. Mr Charlesworth had not complied and the Committee therefore agreed to take legal proceedings against him.

Similarly, in June 1909 letters were received by the council from Mr Hoey and Mr Sutherland (the other two owners) requesting more time to complete the work. However, the committee resolved that enough time had already been allowed for the owners to make good the work, so it was put out to tender *(Minutes of Sanitary Committee of Hemsworth Rural District Council 1897-1909).*

The inspector of nuisances also had to deal with potential health problems caused by the residents of Faith Street. In April 1908 he reported that Mr Enoch Law of number 20, Faith Street, had not complied with a notice served upon him to abate the nuisance on his premises caused by keeping poultry. He stated that if nothing was done within the next seven days proceedings would be taken. Similarly, in May 1908 he reported that William Carbis and Alfred Wootton of Faith Street had not complied with notices served upon them regarding nuisances caused by poultry *(Minutes of Sanitary Committee of Hemsworth Rural District Council 1908).*

The Sanitary Committee minutes also record that, on more than one occasion, the scavenging in South Kirkby was found to be far from satisfactory *(Minutes of Sanitary Committee of Hemsworth Rural District Council August 1898).* In his annual report for 1897, the MoH, Dr Coleman referred at some length to scavenging problems, especially in the colliery townships and he noted that, 'when scavenging is performed by farmers, this duty is often neglected during the summer months when more frequent emptying is necessary. It is but natural that hay-time and harvest claim their first consideration' *(Coleman 1897: 3).*

6.5 Conclusion

Without the Vaccination Registers it would not have been possible to carry out a micro-study such as the one presented in this chapter. Together with the CEBs they have

provided most of the statistical data on fertility, mortality and nuptiality. We have seen that although some of the larger households suffered the largest number of infant deaths, this was not always the case as such deaths occurred in some of the smallest households. Because the Vaccination Registers give us access to data on names, addresses and dates of birth which we could not find by other means we can attempt (in conjunction with the 1901 CEBs) fairly detailed family reconstitution for the families in a small community such as Faith Street.

From the comments by Aaron Wilkinson *(Wilkinson 1979)* in his book and by members of South Kirkby Family History Society it appears probable that it was only those families who could not afford to move elsewhere that actually stayed for very long in Faith Street. It would also appear that many of the families living in Faith Street were 'high risk' as far as infant mortality is concerned. According to the Vaccination Registers, a number of families only stayed there long enough to give birth to one or two infants before moving on and this continual unsettled lifestyle would not have been conducive to good infant health. However, from information received from a member of the South Kirkby and South Elmsall Family and Community History Association it is quite clear that a number of families who were resident in Faith Street at the time of the 1901 Census were still living there during the 1940s *(South Kirkby and South Elmsall Family and Community History Association: 2002).* It is therefore likely that, over time, the situation in Faith Street improved and respectable families did settle there.

There does seem to have been a disregard for the potential risks to health caused by keeping poultry in close proximity of dwelling places. One of those referred to in the minutes of the Sanitary Committee in this regard was Enoch Law who lived at number 20 Faith Street. His wife gave birth to five infants in eight and a half years, only one of whom survived infancy. It is impossible to tell from the available records whether this had any connection to the keeping of poultry near the house.

The records of the Sanitary Committee also show a complete disregard for public health displayed by the owners of the property in Faith Street as evinced by their unwillingness to carry out necessary repairs to the drains and sewers. It is also likely that the proximity of the sewage works to Faith Street may have been a determining factor of the particularly high IMR there; the minutes of the Sanitary Committee make it clear that the sewage works were in a poor state of repair and unsuitable for the rapidly growing population of the township.

As can be seen from Figure 6.1, despite its proximity to South Kirkby colliery, Faith Street enjoyed a semi-rural position, not being surrounded by other houses, If, then, one cannot ascribe the high IMR of Faith Street to the density of housing, this cannot be said about the density of population within the houses. For at 6.8 residents per house, Faith Street exhibited a well above average density. And, as we have seen, the average masks the extent of overcrowding in some houses.

Furthermore the state of the street itself, referred to so many times in the minutes of the Sanitary Committee, seems likely to have contributed to the high IMR. The habit of keeping poultry in close proximity to houses was also likely to have attracted flies and to have caused contamination of milk and foodstuffs which would have been particularly harmful to infants. As Newman said, 'The poor have no pantries, and the milk is stored in dirty vessels exposed to dust and other uncleanness' *(Newman 1906: 327)*. It was not through deliberate negligence that miners' families in Faith Street were exposed to a dangerous environment, but largely through an ignorance of basic hygiene, particularly if milk and other foodstuffs were not stored in covered, clean containers. Woods, Watterson and Woodward also emphasise the point made by Newsholme that even if milk was pure when it reached the home, contamination there as a result of poor domestic hygiene would have nullified the effects of pasteurisation and the bottling process *(Woods, Watterson, Woodward 1989: 121)*. The presence of so many 'high risk' families also appears to be a factor in the persistently high IMR in Faith Street.

There is no reason to believe that domestic hygiene would have been any better in other areas of South Kirkby and cases were reported of residents keeping poultry in close proximity of houses throughout the township *(Minutes of Sanitary Committee of Hemsworth Rural District Council 1895-1909)*. However, in those areas of the environment which were outside the control of the householders themselves, problems in Faith Street seem to have been reported with far greater frequency than any other part of the town. It therefore seems probable that a combination of factors was responsible for the high IMR in Faith Street; these being the poor condition of the sewage works and the street itself together with the number of high risk families who lived there, albeit often briefly. Indeed, the behaviour of some of the residents (see page 2 above) gave the street a lasting notoriety and this reputation would have surely deterred some of the more 'respectable' families from living there at all!

7
CONCLUSION

The purpose of this research project of which this thesis forms a part was to try and determine the causes behind the decline of infant mortality in England and Wales at the beginning of the twentieth century through a study of the Hemsworth district in the former West Riding of Yorkshire. In order to do this we first had to discover the factors which contributed to the maintenance of the high infant mortality rate of the 1880s and 1890s. We have seen in Chapter 1 the many different opinions as to the major causes behind both the high infant mortality of those decades and its eventual decline from the turn of the twentieth century onwards. As we have seen, although there is broad agreement between both contemporary and more modern commentators on the subject, there is a wide divergence of opinion as to which were the greatest contributory factors to the maintenance of the high rate. Of the contemporary commentators, both Newman and, in particular Newsholme, felt that poor sanitation was a vital contributory factor to the high IMR, especially in urban areas. More recently, Woods, Watterson, Williams, Galley and Buchanan (amongst others) have come to same conclusion. This is particularly evident in some of their work on the differences between urban and rural IMRs. Both Buchanan and Morgan have discussed the role played by houseflies in the spread of disease and the resultant high IMR. Whilst Buchanan has emphasised the effect of a poor urban environment, in particular inadequate scavenging, drainage and sewerage on the prevalence of houseflies, Morgan has come to the conclusion that it was the growth in horse transport, accompanied by massive accumulations of manure that was responsible for the number of houseflies in the 1890s in conjunction with the meteorological conditions of that decade This, he asserts, and not just the general urban filth was one of the major factors in the high IMR of that decade.

As referred to above, some felt that the provision of pure milk was the key to reducing infant mortality. However, scholars such as Szreter have pointed out that it is of no use providing pure milk if the conditions within the domestic environment are such that this milk will quickly become contaminated. Szreter puts much weight on the link between the environment within the home and the IMR. This links to yet another other factor which some see as important, i.e. the education of women and girls. As we have seen, Newman felt that this was of utmost importance. Ashby went even further when he remarked that the highest IMRs occurred in those counties where the marriage document was signed with an X, instead of a signature. He stated that in those counties where there was a large

proportion of women who were not educated and who were consequently ignorant not only about general matters, but also concerning the proper care of their infants *(Ashby 1922: 8).*

The focus of this thesis has been the rapidly growing mining community of South Kirkby between the years 1871 and 1911 with some comparison with those townships of the Hemsworth district which remained purely agricultural. In later chapters of this thesis we have seen that some of these factors referred to in Chapter 1 were more relevant than others in Hemsworth district. For instance, the question of a supply of pure milk appears to have not been a significant factor and, in fact, the various schemes in other parts of the country to provide this seem to have had little or no impact on the IMR. As we have seen, there is no reason to suspect that miners' wives breastfed their infants any less than the rest of the working classes. Various sources have put the number of working class mothers who were breastfeeding their infants at the age of one month at roughly 80 per cent. As far as miners' wives are concerned the percentage may have been even higher as they rarely took paid employment outside the home.

Buchanan has stated that some contemporary medical opinion believed that vice amongst the working classes was responsible for a considerable proportion of the infant mortality at the period in question. Drunkenness and syphilis were regarded as being the main manifestations of this 'vice'. However, according to official figures comparing infant deaths from various causes according to fathers' occupations, miners had very low rates of infant deaths from either syphilis or overlying (infant deaths due to overlying were commonly associated with alcohol and drunkenness). In fact, the IMR amongst miners due to syphilis was only 0.7 per thousand and due to overlying was only 0.6. In both cases these rates were only bettered by professional families. It is therefore reasonably safe to assume that neither drunkenness nor syphilis were significant factors in the persistently high IMR in Hemsworth.

Apart from endogenous mortality, which was widely held to be unpreventable, it appears that most infant deaths in mining areas were due to diseases in which the environment, both external and domestic, was a major factor. This would appear to be particularly true in Hemsworth district. Industry and social conditions in England and Wales changed enormously between 1871 and 1911 and nowhere in the country did they change much more than in Hemsworth district. In the space of less than twenty years this district grew from being a sleepy, agricultural backwater, seemingly by-passed by the industrial revolution, to a busy mining district with a rapidly growing population. Despite the number of deep mines, each employing hundreds of men, which were sunk in the district (South

Kirkby, Fitzwilliam at Hemsworth, Frickley and Grimethorpe) the district remained largely rural, as is typical of many colliery districts. Indeed it was served by a rural district council from 1895 until 1930 when it became an urban one. Yet the IMR approached that of many much more densely populated urban areas, for example, the Fulham district of London *(Smith 2002: appendix 1)*, which by the turn of the twentieth century was completely urbanised. The fields and farms had disappeared from there over the course of the nineteenth century and the majority of the houses which stand there today were already there in 1900. However, the atmosphere in mining towns such as South Kirkby was constantly heavy with smoke and soot as the miners kept their fires going the whole year due to supplies of free coal *(Wilkinson 1979: 10)*. This atmosphere was extremely injurious to health, particularly to the lungs of infants and young children.

As we have seen, however, the rapid growth in industry and the population was not matched by a similar growth in the supply infrastructure necessary to provide the townships with a supply of clean drinking water, adequate scavenging and sewerage. The Sanitary Authority was unwilling to make the necessary expenditure to effect the necessary improvements, mainly for two reasons. Firstly, they believed, perhaps with some justification, that the miners were itinerant and that such an outlay was therefore likely to be a waste of money. The colliers and their families who came to settle in South Kirkby came from a wide range of English counties as well as Ireland, Wales and overseas. The places of birth of their children given in the CEBs show that many of the miners had moved several times from their own place of birth (see Chapter 6: 162 and Appendix 1: 180-192). However, it is clear that, contrary to the expectations of the Sanitary Authority, many of them did settle permanently in South Kirkby and the neighbouring townships *(communication with a member of South Kirkby and South Elmsall Family and Community History Society – unreferenced)*. Secondly, the Sanitary Authority was largely made up of small, rural tradesmen who, unlike the councillors in the large Victorian cities had little experience of government or delusions of grandeur, and whose main concern was to keep the rates as low as possible, There were also a few representatives of the landed gentry on the Sanitary Authority and some of those, such as Lord St Oswald (see chapter 2) who were actively opposed to further expansion of the coal industry and appeared to wish to hold back the clock. They were therefore opposed to providing housing and other facilities for the miners and their families.

The first major conclusion of this research is in broad agreement with the work of Buchanan and others on the role of a poor sanitary environment in producing a high IMR. The Sanitary Authority in Hemsworth appears to have been totally unprepared and ill

equipped to cope with the huge influx of miners. This led to a shortage of pure drinking water, accumulations of waste materials due to inadequate scavenging and inadequate sewerage and drainage to meet the needs of the growing population. As we have seen, prior to the sinking of the deep mines in the area during the 1880s and early 1890s, Hemsworth district had a low IMR. After this period, there was little increase in the IMR of the agricultural townships as they remained largely untouched by the effects of coal mining and the resulting increase in population. In South Kirkby, however, there was a steep rise in the IMR which contributed to the general rise in the IMR for Hemsworth district. There is no reason to believe that South Kirkby was any different to the other colliery townships and it is therefore likely that the figures for South Kirkby would be representative for other colliery townships such as South Elmsall, Grimethorpe and Hemsworth (Fitzwilliam and Kinsley) This contrast between the IMR in the parts of Hemsworth district which remained purely agricultural and those which developed into colliery townships demonstrates quite clearly the urban/rural divide which is at the heart of work by Woods and Watterson as well as Williams and Galley. It was only after Hemsworth Rural District Council was established in 1895 that genuine efforts were made to heed the advice of the MoH of the time, Dr Coleman. He was particularly concerned with the provision of a clean water supply, adequate scavenging and sewerage, particularly for the growing colliery townships. By the time Dr Coleman handed over to Dr Wiltshire in 1906 these were in place and the IMR had finally begun to fall.

The second main conclusion of this study is that some of some of the people themselves were at least partly responsible, particularly with regard to the state of the domestic environment and the care of infants and children. However, it should be emphasised that there was no intention on their part to cause harm. In fact, it was ignorance that accounted for some of their habits, such as keeping livestock in close proximity of their dwellings, that were likely to have an injurious effect on health in general and the IMR in particular. Their homes were often smoky inside due to their habit of keeping a coal fire going all year round in poorly ventilated conditions, although this lack of adequate ventilation was often outside their control. The micro-study of Faith Street demonstrates how some of the families were constantly moving from one home to another (within the same community, or even street) and how some of these families were not highly regarded even within their own community. These families were those most likely to be at risk from infant deaths. The role of health visitors appointed by the council in 1910 at Dr Wiltshire's instigation, was therefore of vital importance in educating the mothers in good domestic hygiene habits and the feeding and general care of infants. However, as this study finishes in the year 1911 there is little opportunity to see what impact these health visitors had, although it is known that the IMR

was already falling by 1910, and with the exception of 1911, continued to fall thereafter. It is clear that the residents were not entirely responsible for the condition of the domestic environment as this was also likely to be affected by poor design of the houses, particularly in relation to ventilation and, as we have seen in Chapter 6 (pp 163-166), the negative attitude of landlords towards making improvements. It is apparent from examining the photograph of Faith Street on page 125 that the windows there were very small in relation to the size of the houses. As we have said, the landlords were also at fault by neglecting to maintain their houses properly and also, as we have seen, by failing to provide adequate sanitary facilities, paved yards and clear drains.

It is also apparent that many of the factors were closely interwoven. Infants whose mothers were unable to breastfeed (and amongst the working class, failure to breastfeed was almost entirely down to inability rather than unwillingness) were particularly vulnerable to these interwoven factors. Firstly, the diet fed to them was often likely to be contaminated by bacteria - either the milk was not clean to start with or was contaminated in the home by not being kept at the correct temperature, being kept in dirty vessels or by flies through not being covered. If they were fed diluted condensed milk, as was often the case in colliery communities, then the water used to dilute the milk was not always clean. Secondly, these infants often failed to gain weight making them less likely to survive the bouts of diarrhoea, chest infections or measles which spread so easily in the small, but densely populated communities in which they lived. Clearly, those infants who were weaned during the summer months were therefore also at risk from contaminated milk. Thus, as well as being adversely affected by not being breastfed, they were also at risk from an unsanitary urban environment as well as the environment within the home. This domestic environment was, in turn, linked to the mothers' lack of education.

Miners were notorious for their high birth-rate, and a high birth rate was usually, although not always, accompanied by a high IMR *(Blagg 1910: 10).* However, miners' wives were not usually employed outside the home; another factor which was regarded as a negative factor according to infant mortality by contemporary commentators. As well as maintaining a higher birth-rate than other occupational groups, the IMR amongst miners was much slower to fall (see Chapter 1: 16). The Vaccination Registers enable us to see this high birth-rate at first hand, for as family reconstitution is relatively simple using through their use, we can observe birth intervals in individual families. We can see that some mothers have relatively short birth intervals of 18 months or less, whilst others more usually have two to two and half years. We see frequently that it is those families who have the shortest birth intervals who tend to suffer the most infant deaths. The Vaccination Registers can not

tell us the cause of these infant deaths, but a shorter birth interval obviously means that the mother has a shorter time to recover both physically and nutritionally between one pregnancy and the next. We have seen that approximately 80 per cent of working class mothers breastfed their infants (see Chapter 1: 21). Breastfeeding often had the effect of suppressing fertility and it may therefore be that those mothers who were unable to breastfeed, for whatever reason, were those who had the shortest birth intervals. Additionally, the death of a breastfed infant would also have the effect of speeding the arrival of the next birth *(Preston: 1978: 7).* The Vaccination Registers allow us to see these short birth-intervals and also to see whether the first of the two infants had died within a few weeks or months of birth.

All this evidence points to the fact that, as hypothesised in the introduction, it was indeed the very rapid change from being a purely an agricultural district to a colliery district which brought about the increase in the IMR in Hemsworth since the 'healthier' agricultural townships formed an ever decreasing proportion of the district's total population. This is in line with Szreter's observations on the 4 'Ds'; disruption, leading to deprivation, to disease and eventually to death, as a result of rapid economic growth. Szreter observed that this occurred in the cities and larger towns of Victorian England, but he stated that the same pattern of deterioration is also found in small towns, such as mining towns, if the move towards urbanisation was rapid *(Szreter 2000: lecture to OU group, University of London).*

It is clear that there was not one single factor which was responsible for the decline which marked the conquest of infant mortality in Hemsworth. Improvements in the environment, such as water supply, drainage and sewerage (some of which did not take place until the early 1900s) began to have a positive affect on the IMR from 1905 onwards. The influence of health visitors who were introduced by Dr Wiltshire in 1910 is more difficult to quantify as it is not known whether their advice on infant feeding and general domestic cleanliness was heeded by mothers. However, the IMR did begin to fall more rapidly from 1910 (with the exception of 1911) and it is possible that the health visitors may have had some affect for we have seen that the MoHs in Hemsworth believed that the mothers were extremely ignorant of basic hygiene and child-rearing skills. They were also lacking in knowledge of the necessary precautions if they were to prevent their children contracting diarrhoea and severe respiratory infections. On the other hand, the local authority also had some influence through bye laws relating to new housing, thus having a positive affect on the domestic environment. At the same time there was increased prosperity which possibly meant that miners' wives (in common with other working class groups) were able to afford

better food for their children and also be able to purchase soap and other cleaning materials to improve both personal and domestic hygiene.

The Vaccination Registers enable us to observe families in some detail, including the incidence of twin and illegitimate births, as discussed in chapter 4: 101-103. It is thus possible to calculate the affect which these twin and illegitimate births had on the overall IMR. In the case of South Kirkby and the agricultural townships of Hemsworth district we have seen that twin births had a greater impact on the IMR than did illegitimate births. If this pattern was repeated nationwide then it is likely that twin births made a considerable contribution to the overall IMR for England and Wales. Clearly, a more detailed analysis of twin births and their impact on infant mortality on a large scale may yield interesting results. We thus see that the Vaccination Registers enable us to see beyond the statistics of infant mortality to the individual infants, their families and the communities in which they lived.

The cemetery records, in conjunction with the Vaccination Registers, enabled a short examination of still-births to be made for the period 1908-1912. We have seen that the cemetery records listed the burials of still-born infants and thus allowed the calculation of still-birth rates. In Chapter 4 (111) it was noted that the still-birth rate was calculated for one particular year, 1908, and that the rate that year was 85 still-births per thousand total births. Still births were not recorded in England and Wales until some 20 years later so it is difficult to ascertain how this compared to the rest of the country. However, Buchanan produced figures of still-birth rates for the Rhondda, another mining community in South Wales, which showed that the still-birth rate there peaked at 76 per thousand total births, the mean rate being 61 still-births per thousand total births *(Buchanan 1983:95).* In comparison to this, the figure for South Kirkby in 1908 appears to be high. Linking the parents of still-births from the records with parents in the Vaccination Registers proved to be more difficult as the addresses for still-born infants were not given in the cemetery records, merely the father's name, or, in the case of the child being illegitimate, the mother's name. However, these records could be a useful source for further research into still-births as the records continued until the present day. With more time more of the still-born infants could be linked to births in the Vaccination Registers and parish baptismal records, providing useful information on familial patterns of still-births and neonatal deaths. Clearly such records are likely to be available in other parts of the country and would be well worth examining for the interesting data which they yield on still-births which are so closely related to neonatal deaths in terms of cause *(Hart 1998: 224).*

The nature of the almost 100 per cent mono-economic activity of the district probably meant that new ideas such as those with regard to hygiene and child-rearing were slower to disseminate in Hemsworth and other colliery districts than in much of the country at large. Because of this, districts such as Hemsworth lacked an abundant middle-class, and did not have the financial resources enjoyed by the Victorian and Edwardian cities. This was one of the chief reasons why the necessary initiatives did not take place there until later than elsewhere and why there was more resistance to change. However, once the necessary sanitary improvements were beginning to take place (although water closets were still not common even after the end of the First World War) the IMR finally began to decline and this was further was further assisted by the appointment of health visitors in 1910. A comment which Newman made in 1901 was nowhere more true or better illustrated than in Hemsworth: 'Infant mortality is one of the most reliable tests of the health of a community and of the sanitary conditions of a district' *(Newman 1901: 18).* It is clear that by 1911 (see Chapter 4: 118) infant mortality was beginning to fall, and although there was a considerable way to go, the conquest of infant mortality there had begun.

The main contribution this thesis makes to the knowledge of infant mortality is through the micro-study of Faith Street. This study would not have been possible without the vaccination registers which provided us with details of all the infants who were born on this street from when the first residents moved in during the spring of 1894 till the point at which this thesis concludes, i.e. 1911. The data which the vaccination registers provide is very specific. The fact that the name, date of birth and address is given for each infant provides a useful starting pointing for the family reconstitution which is vital for a micro-study such as this where specific knowledge of the residents is of greater importance than the quantity of data available. It is therefore possible to cross reference the births and infant deaths from the Vaccination Registers to the information from the 1901 CEBs. We know how many siblings these infants had and their position in the family (e.g. first born, last born child). We have seen (chapter 4) that from the combined information provided by the CEBs and the Vaccination Registers we know roughly the age of the mother at the birth of each child. Because the father's name is provided in the Vaccination Registers we are able to observe birth intervals in individual families, although in the case of families who frequently move from one address to another it is necessary to cross reference these births with the information given in the parish registers of baptisms to be certain that we are dealing with the same family. In some cases very short birth intervals (10 months or less) have been observed and here we may deduce that the second birth was almost certainly premature and the infant invariably died within a few days of birth. This family reconstitution, for which the Vaccination Registers are a vital component, enables us to observe the families

with a high proportion of infant deaths. We have seen that these families were not always those of miners or agricultural labourers, but occasionally belonged to the landed gentry and middle classes. Although, undoubtedly there were some mothers who for whatever reason possessed fewer child-rearing skills than others, it seems probable that there were genetic factors involved in some of the families with a high incidence of infant death. These factors, such as the inability of the mother to carry infants to full-term, the rhesus-factor or inherited diseases, would not have been fully understood one hundred years ago and there was still less knowledge of how to treat such conditions.

In the case of Faith Street, the precise knowledge of the families there enables us to link information from the Minutes of the Sanitary Committee of the Rural District Council when individuals are occasionally referred to, for example, the incident involving a number of young boys damaging a fence and trespassing upon the land of the sewage works (chapter 6: 152). Because of the precise nature of the information gleaned from the vaccination registers in conjunction with the CEBs, these boys are not just the nameless perpetrators of some petty act of vandalism, but living members of families with whom we are familiar.

Thus, whilst Faith Street may not have been typical of all communities in England and Wales, it is probably typical of many streets in different mining communities all over the country. The micro-study increases our understanding of how and why infant mortality occurred at a very local level and if such a study were to be repeated in other, varying types of communities across the country then we should have a deeper understanding of the causes of infant mortality far beyond that gained from nameless statistics.

The large scale research using aggregate data undertaken by those such as Wrigley, Woods, Watterson, Williams, Garrett and Galley has provided us with detailed statistical information on the various peaks and troughs in the IMR. It has also identified the urban/rural divide in infant mortality as well as differences according to paternal occupation. This thesis has not made so much use of statistics, although it is imperative that these should be accurate when provided, but the nature of the micro-study has enabled us to see the victims of infant mortality (both infants and parents) as individual human beings rather than just numbers or statistics. In other words, it enables us to push flesh on the bones of the statistics which are already widely known.

Appendix 1 – Entries from 1901 Census for Faith Street

No	Name	x	Sex	Age	Occupation	Birthplace
1	David Walton	Head	M	48	Coal Miner bg	Staffordshire
	Caroline Walton	W	F	53		Staffordshire
	David Walton	S	M	15	Coal Miner bg	Barnsley
2	George Giles	Head	M	45	Coal Miner bg	Dudley, Staffordshire
	Mary A Giles	W	F	38		" "
	John Giles	S	M	14		" "
	William Giles	S	M	12	Scholar	" "
	Martha Giles	D	F	10	Scholar	" "
	Winifred Giles	D	F	6	Scholar	Hemsworth
3	John Turner	Head	M	37	Coal Miner bg	Rosedale Abbey
	Mary J Turner	W	F	35		Rosedale Abbey
	Louisa Turner	D	F	12	Scholar	Liverton, Lincs
	Elizabeth Turner	D	F	10	Scholar	Carlinghow
	Florence Turner	D	F	8	Scholar	South Kirkby
	John G Turner	S	M	6	Scholar	South Kirkby
	Mabel Turner	D	F	4		South Kirkby
	Jane Turner	D	F	2		South Kirkby
	Thomas Turner	B	M	45	Coal Miner bg	Yorkshire
4	Matthew White	Head	M	40	Coal Miner bg	Barnsley
	Alice White	W	F	39		Worsbrodale
	John H White	S	M	20	Soldier	Barnsley
	Joe White	Br	M	28	Coal Miner bg	Barnsley
5	Senior Griffiths	Head	M	58	Coal Miner bg	Buckley, N Yorks
	Annie Griffiths	W	F	37		Wakefield
	William Brown	B	M	22	Coal Miner bg	Gloucestershire
	Ada Brown	B	F	17		Stanley, Yorks
	Frederick Brown	B	M	20	Coal Miner bg	Staffordshire

Ada Brown gave birth to 9 children between June 1901 and October 1911, 5 girls and 4 boys. 4 of the children did not survive infancy.

No	Name	x	Sex	Age	Occupation	Birthplace
6	John Beverley	Head	M	32	Coal Miner bg	Barnsley
	Hannah Beverley	W	F	28		New Jersey, USA
	Harry Beverley	S	M	11	Scholar	Barnsley
	Arthur Beverley	S	M	9	Scholar	Barnsley
	Lilly Beverley	D	F	6	Scholar	Barnsley
	Walter Beverley	S	M	5 m		South Kirkby
	Additionally, a son George was born on 28.02.1897, vaccinated 19.10.1897, Daughter Isabella born 08.07.1902 at 6 Faith St					
7	Benjamin Sydney	Head	M	31	Coal miner	Leeds
	Eliza Sydney	W	F	27		Gildersome, Yorkshire
	Alice Sydney	D	F	7	Scholar	Leeds
	Albert Sydney	S	M	2		Leed
	John Simpson	FiL	M	52	Coke Burner	Hykeham, Lincs
	Willie Simpson	BiL	M	17	Coal Miner bg	Leeds
	Harriet Simpson	SiL	F	19	Cloth Weaver	"
	Horace Simpson	BiL	M	12	Scholar	"
	Annie Simpson	SiL	F	15		"
	Louisa Simpson	SiL	F	10	Scholar	"
	John Simpson	BiL	M	6	Scholar	"
8	Mary A Turton	Head	F	47		Stanley, Derbyshire
	Samuel Turton	S	M	19	Colliery labourer	Hoyland, Yorks
	George Turton	S	M	18	Colliery labourer	Carlton, Yorks
	James Turnton	S	M	14	Pony driver bg	Monk Bretton, Yorks
	Henrietta Turton	D	F	12	Scholar	Masboro, Yorks
	Wilfred	S	M	9	Scholar	"
	Maria Turton	D	F	7	Scholar	"
	James Wildman	SiL	M	30	Coal Miner bg	Staffordshire
	Elizabeth Wildman	D	F	22		Attercliffe, Yorks
	Ethel May Wildman	GD	F	10m		South Kirkby
	Eliazabeth Wildman gave birth to a further 4 children between July 1902 and June 1910 – all born at Milthrope's Row					
9	Arthur Newcombe	Head	M	24	Coal Miner bg	North Elmsall
	Annie Newcombe	W	F	27		Middleton
	Frances Newcombe	D	F	4		South Kirkby
	Harry Newcombe	S	M	11m		South Kirkby
	Henry Moore	Boa	M	20	Coal miner bg	Derby
	Annie Newcombe gave birth to a son in May 1901, a daughter in November 1903 – both at Faith St and a daughter in July 1909 at Carlton St.					

No	Name	x	Sex	Age	Occupation	Birthplace
10	John Wilkin	Head	M	37	Coal Miner bgt	Eston, Yorks
	Elizabeth Wilkin	W	F	34		Runswick, Yorks
	Evelyn Wilkin	D	F	6	Scholar	South Kirkby
	Daughter born 13.08.1896, died 08.03.1897					
11	Tom Hall	Head	M	50	Coal miner bg	Yorkshire
	James Hall	S	M	16	Coal miner bg	Yorkshire
	Jane Fleetwood	Boa	F	38	Housekeeper	Barnsley
	Willie Fleetwood	Boa	M	15	Colliery labourer ag	Barnsley
	George Holroyd	Boa	M	20	Coal miner bg	Barnsley
	Jane Fleetwood gave birth to daughter on 08.03.1903 who died 14.09.1903					
12	Isaac Wilkinson	Head	M	41	Coal miner bg	Manchester
	Sarah Wilkinson	W	F	37		Manchester
	Eliza Wilkinson	D	F	18		New Mills, Derbyshire
	Harriet Wilkinson	D	F	16		Hyde, Cheshire
	Clara Wilkinson	D	F	11	Scholar	Hyde, Cheshire
	Arthur Wilkinson	S	M	9	Scholar	Shafton, Yorks
	Gertrude Wilkinson	D	F	7	Scholar	Shafton, Yorks
	Sarah A Wilkinson	D	F	5m		South Kirkby
	Daughter born 30.12.1896, died 14.10.1897					
13	John Millard	Head	M	38	Coal Miner bg	Staffordshire
	Mary Millard	W	F	35		Yorkshire
	John W Millard	S	M	17	Pony keeper bg	Yorkshire
	Elizabeth Millard	D	F	13		Methley, Yorks
	Florrie Millard	D	F	10	Scholar	"
	Joseph Millard	S	M	8	Scholar	"
	Mary E Millard	D	F	6	Scholar	"
	Thomas Millard	S	M	3		South Kirkby
	Son Harry baptised 22.05.1901, son Clifford born 11.05.1899, buried 07.05.1900, daughter Evelyn born 06.05.1907, vaccinated 13.07.1907					

No	Name	x	Sex	Age	Occupation	Birthplace
14	Eleazor Sanders	Head	M	35	Coal Miner bg	Gainsboro, Lincs
	Alice Sanders	W	F	36		Slinderwell, Lincs
	Ellen Sanders	D	F	15		Runswick, Lincs
	William Sanders	S	M	14	Pony driver bg	Linpdale, Yorks
	Hannah Sanders	D	F	11	Scholar	Skelton, Yorks
	Thomas Sanders	S	M	10	Scholar	Bretton, Yorks
	Susan Sanders	D	F	8	Scholar	Frindon, Co Durham
	Mary A Sanders	D	F	7	Scholar	Hemsworth
	John A Sanders	S	M	6	Scholar	South Kirkby
	Samuel Sanders	S	M	4		South Kirkby
	Martha J Sanders	D	F	1		South Kirkby
	Son Ambrose born 24.02.1902, died 24.09.1902. daughter Agnes buried aged 2 months on 24.09.1904, son Michael born 16.12.1908, vaccinated 18.02.1909.					
15	George H Ellis	Head	M	39	Coal miner bg	Yorkshire
	Elizabeth Ellis	W	F	37		Derby
	George Ellis	S	M	15	Farm labourer	Featherstone
	Charles Ellis	S	M	13	Pony driver ag	"
	John Ellis	S	M	11	Scholar	"
	Ellen Ellis	D	F	9	Scholar	South Kirkby
	Mary A Ellis	D	F	6	Scholar	" "
	Rose Ellis	D	F	4		" "
	Thomas Ellis	S	M	1		" "
16	Henry Southall	Head	M	67	Boot repairer at home	Birmingham
	Esther Southall	W	F	62		Staffordshire
	Richard Southall	S	M	25	Coal miner bg	Staffordshire
	Harry Southall	S	M	23	Colliery labourer bg	Staffordshire
17	Arthur Horton	Head	M	31	Coal miner bg	Gloucestershire
	Lucy Horton	W	F	29		Bloxwich, Staffs
	John W Horton	S	M	7	Scholar	Moorthorpe
	Lucy L Horton	D	F	9	Scholar	Moorthorpe
	Alma Horton	D	F	4		Castleford
	Lawrence Horton	S	M	1m		South Kirkby
	John McGawley	Boa	M	32	Coal miner bg	Nottingham
	Son Albert born 09.10.1895, died 19.10.1895					

No	Name	x	Sex	Age	Occupation	Birthplace
18	John Pickup	Head	M	29	Coal miner bg	Prescett, Lancs
	Annie E Pickup	W	F	27		Morley, Yorks
	Leah Pickup	D	F	5	Scholar	Carlton, Yorks
	Additionally, boy, Claud born 05.03.1899, died 11.11.1900 And girl, Ivy born 23.08.1900, died 20.09.1900					
	John Lienby	Boa	M	28	Coal miner bg	Nottinghamshire
19	Isaac Harris	Head	M	47	Coal miner bg	Shropshire
	Mary Harris	W	F	47		Staffordshire
	Harriet H Harris	D	F	20		Staffordshire
	Albert Harris	S	M	11	Scholar	Pemberton, Staffs
	George Harris	S	M	8	Scholar	Derby
	Annie Harris	D	F	16		Staffordshire
	Charles Paton	SiL	M	24	Coal miner bg	Yorkshire
	Mary E Paton	D	F	22		Staffordshire
	Kathleen Paton	GD	F	5m		South Kirkby
	Fred Green	Boa	M	38	Coal commissioner	Sheffield
20	Enoch Law	Head	M	43	Coal miner bg	Staffordshire
	Emma Law	W	F	33		Shropshire
	Additionally, son Richard born 22.02.1897, died 15.02.1898 and Son Enoch born 23.01.1899, died 25.02.1899 and Daughter Harriet born 04.12.1901 and Daughter Ada born 04.01.1903, died 15.05.1903 and Son born 09.01.1905, died 14.06.1905					
	James Peach	Boa	M	52	Coal miner bg	Staffordshire
21	Albert Thompson	Head	M	40	Coal miner bg	Lancashire
	Mary Thompson	W	F	40		Cumberland
	Robert Thompson	S	M	18		Lancashire
	Margaret Thompson	D	F	14		Lancashire
	Thomas Thompson	S	M	10	Scholar	Lancashire
	John Thompson	S	M	6	Scholar	South Kirkby
	Additionally, son Richard born 19.12.1898, died 17.07.1899 And Edwin born 25.11.1903					

No	Name	x	Sex	Age	Occupation	Birthplace
22	Philip Quinn	Head	M	28	Coal miner bg	Oldham, Lancs
	Alice Quinn	W	F	28		Macclesfield, Cheshire
	James Quinn	S	M	4		Oldham, Lancs
	William Quinn	S	M	2		Oldham, Lancs
	Margaret Quinn	D	F	9m		South Kirkby
	James Quinn	F	M	56		Ireland
	Additionally, daughter Mary born 05.07.1902 and					
	Son Philip born 27.02.1908					
23	Henry Johnson	Head	M	36	Coal miner bg	Staffordshire
	Mercy A Johnson	W	F	39		Staffordshire
	Sarah E Johnson	D	F	15		Staffordshire
	Mary A Johnson	D	F	13		Altofts, Yorks
	George H Johnson	S	M	12	Scholar	South Kirkby
	John T Johnson	S	M	9	Scholar	" "
	Eliza Johnson	D	F	3		" "
	Anne E Johnson	D	F	8m		" "
	Additionally, daughter Theodora born 12.07.1891, died 20.10.1891					
	Tom Wickleton	Boa	M	48	Coal miner bg	Derby
	William Wood	Boa	M	46	Coal miner bg	Gawber, Yorks
24	John Davies	Head	M	65	Greengrocer	Netherton, Staffs
	Sarah M Davies	W	F	40		Dudley, Staffordshire
	Annie Davies	D	F	20		Dudley, Staffordshire
	John Davies	S	M	2		South Kirkby
	George Smith	Boa	M	56	Bricklayer (M)	Thorne, Lincs
	Alfred Smith	Boa	M	18	Bricklayer (apprentice)	Goole, Yorks
25	John Hibbert	Head	M	31	Coal miner bg	Ripley, Derbyshire
	Ellen Hibbert	W	F	30		Wakefield
	Maud Hibbert	D	F	11	Scholar	"
	John Hibbert	S	M	6	Scholar	"
	Thomas Hibbert	Fa	M	55	General labourer	Clay Cross, Derbyshire
	Ben Hibbert	Nep	M	14	Pony driver bg	Barnsley

No	Name	x	Sex	Age	Occupation	Birthplace
26	Lewis Spencer	Head	M	30	Coal miner bg	Clay Cross, Derbyshire
	Mary A Williams	Serv	F	33	Housekeeper	Dudley, Staffordshire
	Gertrude Williams	Boa	F	12	Scholar	Dudley, Staffordshire
	Edith Williams	Boa	F	4		Clay Cross, Derbyshire
	Mabel Williams*	Boa	F	3		South Kirkby
	Lilly Williams	Boa	F	1		South Kirkby

Mabel was called Mabel Spencer in Vaccination Register and born 16.03.1898
Further child, Herbert born 27.03.1903 at Faith Street

27	Herbert Walters	Head	M	42	Coal miner bg	Staveley, Derbyshire
	Matilda Walters	D	F	15		Blackwell, Derbyshire
	Ernest Walters	S	M	13	Scholar	Blackwell, Derbyshire
	Abraham Walters	S	M	10	Scholar	Altofts, Yorks
	Alfred Walters	S	M	8	Scholar	Altofts, Yorks
	Charles Walters	S	M	5	Scholar	South Kirkby

Additionally, daughter Annie born 05.05.1899, vaccinated 22.11.1899 but not in census

28	Tom Farmery	Head	M	39	Coal miner bg	Cliff Bridge, Yorks
	Eliza Farmery	W	F	39		Staffordshire
	John W Farmery	S	M	14	Pony driver bg	Wombwell, Yorks
	Lucy Farmery	D	F	12	Scholar	Barnsley
	Lizzie Farmery	D	F	9	Scholar	South Kirkby
	Mary Farmery	D	F	4		" "
	Maria Farmery	D	F	2		" "

Additionally, son Amos born 22.04.1895, died 28.12.1895 and Samuel and Amos born 25.06.1901 and buried 03.07.1901 and Joseph baptised 09.03.1904

	Thomas Brooksham	FiL	M	62	Unable to work	Ryne Hill, Staffs

29	Abram Mills	Head	M	53	Carter	Wigan, Lancashire
	Martha Mills	W	F	49		Wigan, Lancashire
	Thomas Brown	Boa	M	23	Colliery labourer bg	Sutton Colefield
	John Burton	Boa	M	33	Coal miner bg	Burnley, Lancashire
	Henry Cook	Boa	M	49	Colliery labourer ag	Yorkshire
	Thomas Haigh	Boa	M	47	Colliery labourer ag	Barnsley
	Robert Sykes	Boa	M	18	Coal miner bg	Doncaster

No	Name	x	Sex	Age	Occupation	Birthplace
30	John Musworthy	Head	M	53	Coal miner bg	Perthshire
	Mary A Musworthy	W	F	45		Yorkshire
	Caroline Musworthy	D	F	18		Monmouth
	Ada Musworthy	D	F	11	Scholar	"
	Edith Musworthy	D	F	9	Scholar	"
	Elsie Musworthy	D	F	7	Scholar	"
	Charlotte Musworthy	D	F	$		"
31	John Mitchell	Head	M	36	Coal miner bg	Churwell, Yorks
	Mary Mitchell	W	F	22		Old Carlton, Yorks
	Annie Mitchell	D	F	9	Scholar	Churwell, Yorks
	Elsie Mitchell	D	F	2m		South Kirkby
	Additionally, daughter born 16.11.1902, vaccinated 19.12.1902 Son Joseph born 01.06.1908, vaccinated 09.07.1908 Daughter Elizabeth born 09.04.1910, vaccinated 21.05.1910					
32	Alfred Wootton	Head	M	30	Coal miner bg	Hoyland, Yorks
	Sarah Wootton	W	F	28		Barnsley
	Herbert Wootton	S	M	11	Scholar	Leeds
	David Wootton	S	M	9	Scholar	Moreton, Yorks
	George N Wootton	S	M	8	Scholar	"
	Eliza Wootton	D	F	5	Scholar	"
	Harry Wootton	S	M	3		Wakefield
	John Wootton*	S	M	3m		South Kirkby
	John died on 31.07.1901 Additionally, daughter Violet born 24.10.1910, vaccinated 18.12.1910 at 32 Faith Street					
	William Palfreman	Boa	M	34	Coal miner bg	Barnsley
33	John Evans	Head	M	44	Coal miner bg	Wales
	Jessie Evans	W	F	37		Pembroke Dock, Wales
34	Dickson Lord	Head	M	28	Coal miner bg	Purston, Yorks
	Eliza Lord	W	F	26		Derbyshire
	James Lord	S	M	3		Featherstone
	Priscilla Lord	D	F	1		South Kirkby
	James Southern	Boa	M	36	Coal miner bg	Hindley, Lancs
	Ruth Southern	Boa	F	30		Minsbridge, Yorks
	Elizabeth E Southern	Boa	F	2		Barnsley
	Additionally, daughter Dorothy Southern born 31.02.1902, vaccinated 29.07.1902 at 31 Faith St					

No	Name	x	Sex	Age	Occupation	Birthplace
35	Peter Jones	Head	M	37	Coal miner bg	Wales
	Annie Jones	W	F	34		"
	Peter Jones	S	M	16	Hanger-on bg	"
	Joseph Jones	S	M	13`	Scholar	"
	John Jones	S	M	9	Scholar	"
	Margaret A Jones	D	F	6	Scholar	"
	Girl	D	F	4		Oldham, Lancs
	Gwendoline	D	F	2		Oldham, Lancs
	Additionally, daughter Nellie born 17.08.1903, vaccinated 31.01.1904 Daughter, Gertrude born 08.08.1908, vaccinated 26.12.1908 Daughter May born 15.11.1910, vaccinated 22.03.11 I at 5 Queen's Terrace, South Kirkby					
36	Alfred Petty	Head	M	28	Coal miner bg	Newcastle
	Clara Petty	W	F	27		Methley, Yorks
	Horace Petty	S	M	5	Scholar	Methley, Yorks
	Martha E Petty	D	F	2		Methley, Yorks
	Additionally, son John baptised 28.06.1901, buried 20.07.1901					
	Peter Quinn	Boa	M	28	Coal miner bg	Oldham, Lancs
	Mary E Quinn	Boa	F	25		"
	Edith Quinn	Boa	F	6	Scholar	"
	Mary E Quinn	Boa	F	4		Syldsley, Lancs
37	Albert Newbert	Head	M	30	Colliery labourer bg	Barnsley
	Mary A Newbert	W	F	27		Staffordshire
	Elijah Newbert	S	M	11	Scholar	Fryston, Yorks
	Joseph Newbert	S	M	6	Scholar	"
	Albert Newbert	S	M	4		"
	Ann Newbert*	D	F	6m		South Kirkby
	* Ann died 13.08.1901 Additionally, son born 10.12.1898, died 24.09.1899					
	William Walker	Boa	M	29	Coal miner bg	Altofts, Yorks
	Elizabeth Walker	Boa	F	48		Staffordshire
38	Herbert Ambler	Head	M	29	Coal miner bg	Sheffield
	Anne P Ambler	W	F	28		Barnsley
	Eliza Ambler	D	F	8	Scholar	"
	Mary E Ambler	D	F	6	Scholar	"
	John H Ambler	S	M	2		South Kirkby

No	Name	x	Sex	Age	Occupation	Birthplace
39	George Covell	Head	M	27	Coal miner bg	Yorkshire
	Mary Covell	W	F	23		Yorkshire
	Thomas Covell	S	M	1		South Kirkby
	Harriet Covell	D	F	5m		South Kirkby
	Additionally, daughter Minnie born 01.03.1902, died 14.051904 Daughter born 06.01.1905					
40	Alfred Oxley	Head	M	50	Coal Miner bg	Brampton, Yorks
	Florence Oxley	W	F	40		Greasboro, Yorks
	Mary E Oxley	D	F	22		Yorkshire
	George Oxley	S	M	20	Coal miner bg	Brampton, Yorks
	James Oxley	S	M	18	Pony driver bg	"
	Joshua Oxley	S	M	16	Pony driver bg	"
	Ernest Oxley	S	M	14		"
	Horace Oxley	S	M	6	Scholar	South Kirkby
	Irwin Oxley	S	M	2		South Kirkby
41	Charles Day	Head	M	40	Coal miner bg	Brodsworth, Yorks
	May Day	W	F	33		Lancashire
	Priscilla Day	D	F	11	Scholar	Wigan, Lancashire
	James Day	S	M	12	Scholar	"
	Mary A Day	D	F	6	Scholar	"
	Lilly E Day	D	F	4		"
	George Day	S	M	6m		South Kirkby
	Additionally, daughter Hilda born 25.07.1899, vaccinated 19.03.1900 – not on census Daughter born 24.05.1905, vaccinated 19.09.1905 at 5 York Terrace					
	Joseph Adamson	Boa	M	49	Coal miner bg	Halliwell, Lancashire
43	Frederick Budby	Head	M	28	Coal miner bg	Tingley, Yorks
	Eliza Budby	W	F	28		Staffordshire
45	William Simms	Head	M	23	Coal miner bg	Birdwell, Yorks
	Emma Simms	W	F	18		Norristhorpe, Yorks
	Emma gave birth to 7 children at 45 Faith Street between June 1901 and May 1911.					

No	Name	x	Sex	Age	Occupation	Birthplace
47	John Narey	Head	M	31	Coal miner bg	Bradford, Yorks
	Mary E Narey	W	F	29		York
	Mary Narey	D	F	9	Scholar	Pontefract
	Amelia Narey	D	F	8	Scholar	Pontefract
	John W Narey	S	M	6	Scholar	Knottingley
	James Narey	S	M	4		Knottingley
	Margaret Narey	D	F	1		Pontefract

Additionally, daughter Sarah born 15.03.1902, vaccinated 18.02.1903
Son Edward born 03.02.1906, died 05.02.1906
Son Herbert born 17.07.1907, died 17.07.1907
Daughter Vera born 23.06.1910, died 27.09.1910 – all at 47 Faith St

49	Albert Edwards	Head	M	58	Coal miner bg	Bucknall, Staffordshire
	Sarah A Edwards	W	F	38		Hanley, Staffordshire
	Martha Edwards	D	F	15		Bucknall, Staffordshire
	George Atkinson	Boa	M	32	Coal miner bg	Pontefract
51	Ben Tomlinson	Head	M	34	Dealer & coal loader	Gildersome, Yorks
	Hannah Tomlinson	W	F	30		Tingley, Yorks
	Fred Tomlinson	S	M	3		Tingley, Yorks

Additionally, daughter Doris born 14.09.1902, vaccinated 18.02.03

53	Henry Sharman	Head	M	36	Coal miner bg	Rutland
	Maria Sharman	W	F	42		Derby
	Ernest Sharman	S	M	15	Pony driver bg	"
	Sarah A Sharman	D	F	12	Scholar	"
	Mary Sharman	D	F	10	Scholar	"
	Charles Sharman	S	M	8	Scholar	Mexborough, Yorks
	Herbert Sharman	S	M	4		South Kirkby
	Ethel Sharman	D	F	8m		South Kirkby
	Emma Marples	D	F	27	Charwoman	Wakefield
	Thomas A Marples	GS	M	6	Scholar	South Elmsall
	Elizabeth Marples	GD	F	2		South Kirkby

No	Name	x	Sex	Age	Occupation	Birthplace
55	James Ryan	Head	M	31	Coal miner bg	Pontefract
	Sarah A Ryan	W	F	26		Wigan, Lancs
	James Ryan	S	M	5	Scholar	South Kirkby
	Mary Ryan	D	F	8m		South Kirkby
	Additionally, son John born 15.01.1903, vaccinated 10.03.1903					
	Louisa Lyth	Boa	F	49		Platts Common, Yorks
	William Lyth	Boa	M	14		South Kirkby
	Louisa Lyth	Boa	F	11	Scholar	" "
	Enoch Lyth	Boa	M	9	Scholar	" "
	Benjamin Lyth	Boa	M	6	Scholar	" "
	Additionally, daughter Lily Lyth born 07.05.1889, vaccinated 08.06.1889, buried 08.12.1890 aged 18 mths					
57	William H Tordoff	Head	M	36	Coal miner bg	Barnsley
	Mary Tordoff	W	F	36		Yorkshire
	Ernest Tordoff	S	M	16	Horse-driver bg	Barnsley
	Laura Tordoff	D	F	14		"
	Herbert Tordoff	S	M	12	Scholar	"
	Harry Tordoff	S	M	8	Scholar	"
	Frank Tordoff	S	M	5	Scholar	"
	Annie Tordoff	D	F	2		Carlton, Yorks
	Additionally, son Cornelius born 25.05.1902, vaccinated 01.12.1902					
59	Benjamin Jeffs	Head	M	48	Coal miner bg	Cambridge
	Annie Jeffs	W	F	32		Wakefield
	Ada B Jeffs	D	F	11	Scholar	Sutton on Trent, Notts
	Nora Jeffs	D	F	8	Scholar	Hemsworth
	Harry Jeffs	S	M	5	Scholar	Hemsworth
	Charles R Jeffs	S	M	2		Badsworth
61	Josiah Bates	Head	M	38	Coal miner bg	Bloxwich, Staffs
	Mary Bates	W	F	37		Bloxwich, Staffs
	Lydia Bates	D	F	12	Scholar	Staffordshire
	Josiah Bates	S	M	6	Scholar	Staffordshire
	Ellen Bates	D	F	2		South Kirkby
	Harry Bates	Br	M	21	Coal miner bg	Bloxwich, Staffs
	Additionally, son born 17.07.1900, died 18.09.1900 Son born 28.02.1905 – still at 61 Faith St					

No	Name	x	Sex	Age	Occupation	Birthplace
63	Frederick Gomery	Head	M	28	Coal miner bg	Hertfordfshire
	Emma Gomery	W	F	26		Monmouth
	Alice Gomery	D	F	6	Scholar	Pontefract
	Walter Gomery	S	M	5	Scholar	Pontefract
	Mary Gomery	D	F	2		South Kirkby
	Bernice Gomery	D	F	1m		South Kirkby
	Additionally, daughter born 09.03.1900, died 10.08.1900 Son Frederick born 07.03.1902 – still at 63 Faith St					
65	Lewis J Fletcher	Head	M	46	Coal miner bg	Sheffield
	Jon H Fletcher	SS	M	16		"
	Ernest Fletcher	S	M	11	Scholar	"
	Amelia Fletcher	D	F	9	Scholar	"
	Lucy A Fletcher	D	F	6	Scholar	Yorkshire
	Lewis J Fletcher	S	M	2		South Kirkby
	Hannah Buckton	Serv	F	25	Housekeeper	Staffordshire
	Joseph Milletts	Boa	M	23	Coal miner bg	Worcestershire
67	Thomas Turner	Head	M	25	Coal miner bg	Cornhill, Worcestershire
	Martha Turner	W	F	25		"
	Thomas Turner	S	M	4		"
	Elizabeth Turner	D	F	2		Royston, Yorkshire
	Martha Turner	D	F	5 m		South Kirkby
	Additionally, daughter Mary born 04.08.1903					
	George Copeland	Boa	M	48	Coal miner bg	Worcestershire
69	Harry Newbert	Head	M	38	Colliery labourer bg	Doncaster
	Mary Newbert	W	F	34		East Moor, Yorks
	Florence Newbert	D	F	15		Newton, Yorks
	Walter Newbert	S	M	12	Scholar	"
	Emily Newbert	D	F	10	"	"
	Ernest Newbert	S	M	7	"	"
	Harry Newbert	S	M	5	"	Outwood, Yorks
	Ada Newbert	D	F	2		Outwood, Yorks
	Arthur Newbert	S	M	8m		South Kirkby
71	Charles Barrowclough	Head	M	24	Coal miner bg	Howbrook, Yorks
	Catherine Barrowclough	W	F	25		Yorkshire
	David Barrowclough	S	M	2		Leigh, Lancashire
	Jake Huskison	Boa	M	47	Coal miner bg	Salford, Lancashire
	Owen Kelly	Boa	M	27	Coal miner bg	Liverpool, Lancashire

No	Name	x	sex	Age	Occupation	Birthplace
73	Charles M Jones	Head	M	37	Coal miner bg	Stoke-on-Trent
	Percy Jones	S	M	6	Scholar	Ferrybridge, Yorkshire
	Eliazabeth Jones	D	F	9	Scholar	Andenshaw, Lancs
	Nora Hibbert	Serv	F	19	General servant	Morley, Yorkshire
75	Nathan Gordon	Head	M	31	Coal miner bg	Sheffield
	Annie Gordon	W	F	27		"
	Ellen Gordon	D	F	8	Scholar	"
	Fanny Hayes	Nc	F	18		"
	Frank Merrison	Boa	M	47	Coal miner bg	Yorkshire
	Alfred Merrison	Boa	M	17	Colliery labourer bg	Yorkshire
77	William Campbell	Head	M	46	Coal miner bg	Manchester, Lancs
	Mary Campbell	W	F	47		Leigh, Lancs
	Thomas Campbell	S	M	18	Coal miner bg	"
	Mary Campbell	D	F	14		"
	James Haddock	Boa	M	21	Coal miner bg	Lancashire
	Theresa Haddock	Boa	F	20		Leigh, Lancs
	Edward Lee	Boa	M	21	Coal miner bg	Rawmarsh, Yorkshire
	Edwin Senior	Boa	M	25	Coal miner bg	Rawmarsh, Yorkshire
79	Charles Cocker	Head	M	50	Coal miner bg	Barnsley
	Mary Cocker	W	F	49		"
	Tom E Cocker	S	M	20	Coal miner bg	"
	William Cocker	S	M	17	Coal miner bg	"
	Phyllis Cocker	D	F	11	Scholar	"
	Charles Cocker	S	M	8	Scholar	"
	Jim Campbell	Boa	M	48	Coal miner	Not known
	Tom Cauldwell	Boa	M	40	Coal miner bg	Not known

Key for Appendix 1

Column headed 'x' shows relationship to head as follows.

W – wife, S – son, D – daughter, Boa – boarder, GS – grandson, GD – grand-daughter, FiL – father-in-law, F- bather, B – brother, SS – stepson, BiL – brother-in-law, SiL – sister-in-law, Nc – niece, nep – nephew

In occupation column, bg – below ground, ag – above ground

Appendix 2 – Children born at Faith Street according to Vaccination Registers

No	Name	d.o.b	Parent's name	Parent's occupation	Date of Vaccination	Date of Death
23	Lily Carr	30.04.94	Thomas Carr	Coal miner		14.05.94
24	Florence Carr	30.04.94	Thomas Carr	" "		01.05.94
32	Florence Carbis	17.04.94	T C Carbis	Colliery labourer	23.04.95	
34	Arthur Walker	23.04.94	S Walker	Colliery labourer	16.10.94	
37	Margaret Wilkin	26.04.94	J E Wilkin	Colliery labourer	23.10.94	
56	Walter Higgins	21.05.94	Sarah Higgins	Domestic Servant		
2	Horace Oxley	21.06.94	Alfred Oxley	Coal Miner	05.11.94	
16	Edwin Day	04.09.94	James W Day	Colliery blacksmith	14.11.94	
39	Mary Horne	22.09.94	Anthony Horne	Coal miner		22.12.94
21	John Thompson	12.10.94	S A Thompson	Coal miner	22.10.95	
	Lucy Whale	29.10.94	David Whale	Coal miner		
22	Hannah Laverick	14.11.94	James Laverick	Colliery Deputy	19.10.95	
38	Elsie Dolman	29.11.94	Henry Dollman	Coal miner	07.03.96	
12	Lavinia Sanderson	19.12.94	Joseph Sanderson	Coal miner	22.10.95	
7	Myra Edwards	16.01.95	Edward Edwards	Coal miner	16.04.95	
14	John A Sanders	20.01.95	Eleazor Sanders	Coal miner	23.04.95	
15	Charles Holland	01.02.95	Charles Holland	Coal miner	23.04.95	
28	Thomas Wright	16.02.95	William Wright	Coal miner		18.03.94
5	Ernest Dawson	17.02.95	John Dawson	Coal miner	16.04.95	
34	Elizabeth Brown	17.02.95	Richard Brown	Coal miner		24.03.95
5	William Thacker	05.03.95	William Thacker	Coal miner	15.10.95	
28	Amos Farmery	22.04.95	Tom Farmery	Coal miner		28.12.95
36	Esther E Yore	23.05.95	Peter Yore	Coal miner		
6	John Grainger	17.06.95	James Grainger	Coal miner	23.03.96	
19	Mary Lovett	22.06.95	Stephen Lovett	Coal miner	15.10.95	
31	Bertha Jordan	11.07.95	Thomas Jordan	Coal miner		
11	Nancy Ward	03.09.95	Richard Ward	Coal miner	16.12.95	
	Sarah J Carbis	09.09.95	T C Carbis	Colliery labourer	22.04.96	
1	Albert Horton	09.10.95	Arthur Horton	Coal Miner		19.10.95
7	Henry Williams	16.11.95	Noah Williams	Coal miner	26.02.96	
5	Neville Turner	29.11.95	Fred Turner	Colliery labourer	02.04.96	
39	Jane Horne	01.12.95	Anthony Horne	Coal miner	29.10.96	
20	Joseph Melland	01.12.95	Joseph Melland	Coal miner	20.04.96	
6	Sarah Moreton	23.11.95	Harry Moreton	Coal miner	20.04.97	
18	Elizabeth Goodwin	23.01.96	Joseph Goodwin	Coal miner	20.10.96	
2	Charles Walters	30.01.96	Herbert Walters	Coal miner	20.10.96	
31	Hannah Rodway	08.02.96	William Rodway	Coal miner		
1	Caroline Spencer	18.03.96	James Spencer	Coal miner		
3	Mabel Turner	15.08.96	John Turner	Coal miner	27.10.96	

10	Sarah Wilkin	13.08.96	J E Wilkin	Coal miner		08.03.97
26	Walter Roddis	08.08.96	Walter Roddis	Colliery labourer	20.04.97	
38	Agnes Mountain	19.08.96	Wm Mountain	Coal miner		
28	Mary Farmery	28.09.96	Tom Farmery	Coal miner	20.04.97	
2	Irwin Oxley	08.11.96	Alfred Oxley	Coal miner	10.11.97	
34	Eliza Brown	21.11.96	Richard Brown	Coal miner		26.07.97
11	Millicent Walker	17.12.96	Sylvester Walker	Coal miner	20.04.97	
34	Richard Law	22.02.97	Enoch Law	Coal miner	20.04.97	15.02.98
7	James Edwards	22.02.97	Edward Edwards	Coal miner	26.04.98	
20	Mary Millard	05.04.97	Joseph Millard	Coal miner	26.10.97	
23	Female Skelding	15.11.98	A Skelding	Coal miner		08.01.99
26	Mabel Spencer	16.03.98	L Spencer	Coal miner	02.03.99	
37	Male Fletcher	24.05.98	Lewis Fletcher	Coal miner	02.03.99	
61	Female Bate	07.06.98	Josiah Bate	Coal miner	02.03.99	
35	John W Ambler	21.08.98	Herbert Ambler	Coal miner	14.03.99	
28	Maria Farmery	06.09.98	Tom Farmery	Coal miner	02.03.99	
3	Jane Turner	14.09.98	John Turner	Colliery labourer	14.03.99	
71	Joe S Bell	04.10.98	Aaron Bell	Coal miner	09.03.99	
24	John Davies	14.11.98	Alice Davies	Domestic Servant	06.10.99	
63	Mary E Gomery	24.11.98	Frederick Gomery	Coal miner	31.07.00	
51	Annis Harrison	06.12.98	Wm Harrison	Coal miner	02.03.99	
17	Male Newbert	10.12.98	A Newbert	Coal miner		24.09.99
41	Alfred Melland	19.12.98	Joseph Melland	Coal miner	19.05.99	
21	Richard Thompson	19.12.98	Albert Thompson	Coal miner	13.06.99	17.07.99
7	Elizabeth Edwards	20.12.98	Edward Edwards	Coal miner		04.09.99
40	Male Law	23.01.99	Enoch Law	Coal miner		25.02.99
18	Male Pickup	05.03.99	J Pickup	Coal miner		11.11.00
47	George Owen	30.03.99	John Owen	Coal miner	19.02.99	
15	Thomas Ellis	03.04.99	George Ellis	Coal miner	18.12.99	
53	Elizabeth Marples	10.04.99	Emma Marples		16.05.01	
39	Thomas Covell	13.04.99	George Covell	Coal miner	18.12.99	
37	Annie Walters	05.05.99	Herbert Walters	Coal miner	22.11.99	
13	Clifford Millard	11.05.99	John Millard	Coal miner	07.03.00	21.05.00
25	Nora Hibbert	05.06.99	Mary E Hibbert		09.03.00	07.01.01
25	Annis Hibbert	05.06.99	Mary E Hibbert		22.11.99	26.08.00
69	Minnie Dunn	29.06.99	Henry Dunn	Coal miner	09.03.00	
41	Hilda Day	25.07.99	Charles Day	Coal miner	19.03.00	14.10.00
14	Martha Sanders	16.10.99	Eleazor Sanders	Coal miner	04.06.00	
26	Lily Williams	22.10.99	Mary Williams		22.11.99	
55	Male Shepperd	27.10.99	J Shepperd	Coal miner		25.06.00
9	Sarah J Turner	05.11.99	Susannah Turner		29.06.00	20.07.00

17	Richard Fox	13.11.99	George W Fox	Coal miner		
65	Percy Foster	27.12.99	James Foster	Coal miner	09.06.00	
75	Female Jordan	25.01.00	M Jordan	Coal miner		07.02.00
34	Priscilla Lord	07.02.00	Dickson Lord	Coal miner	10.05.00	
63	Female Gomery	09.03.00	Frederick Gomery	Coal miner		10.04.00
9	Harold Newcombe	09.04.00	Arthur Newcombe	Coal miner	04.07.00	20.07.00
35	Doris Sykes	25.06.00	Robert H Sykes	Coal miner		
22	Margaret Quinn	16.06.00	Philip Quinn	Coal miner	19.10.00	12.08.01
53	Ethel Sharman	23.06.00	Henry Sharman	Coal miner	18.10.00	
61	Male Bate	17.07.00	J Bate	Coal miner		18.09.00
69	Arthur Hewbert	05.08.00	Harry Newbert	Hanger on in colliery	12.02.01	
23	Annie Johnson	15.07.00	Henry Johnson	Coal miner	18.10.00	
29	Mary Ryan	31.07.00	James Ryan	Coal miner	22.10.00	01.07.02
18	Female Pickup	23.08.00	J Pickup	Coal miner		20.09.00
41	George Day	07.09.00	Charles Day	Coal miner	12.02.01	
12	Sarah Wilkinson	03.10.00	Isaac Wilkinson	Coal miner	20.04.01	
6	Walter Beverley	25.09.00	John Beverley	Coal miner	23.04.01	
27	Female Newbert	27.09.00	A Newbert	Coal miner		13.08.01
19	Kathleen Turton	26.10.00	Charles Turton	Coal miner	07.03.00	
67	Martha Turner	08.11.00	Thomas Turner	Coal miner	30.04.01	
39	Harriet Covell	05.11.00	Goerge Covell	Coal miner	30.04.01	
32	John Wootton	26.12.00	Alfred Woottom	Coal miner	02.04.01	31.07.01
31	Elsie Mitchell	14.01.01	John W Mitchell	Coal miner	07.03.01	
7	Female Sidney	30.12.01	C Sidney	Coal miner	06.05.02	
31	Dorothy Southern	31.01.02	James Southern	Coal miner	29.07.02	
62	Frederick Gomery	07.02.02	Frederick Gomery	Coal miner		
14	Ambrose Sanders	24.02.02	Eleazor Sanders	Colliery labourer		24.09.02
47	Sarah Narey	15.03.02	John Narey	Coal miner	18.02.03	
29	Minnie Covell	01.03.02	George Covell	Coal miner	23.06.02	14.05.04
38	Charles Jordan	14.03.02	Richard Jordan	Coal miner	07.08.02	
57	Cornelius Tordoff	25.05.02	William Tordoff	Colliery corporal	01.12.02	
9	Male Newcombe	17.05.02	A Newcombe	Coal miner	28.11.02	
43	Male Simpson	06.06.02	H Simpson	Coal miner		
22	Mary A Quinn	05.07.02	Philip Quinn	Colliery weigh check man		
6	Isabella Beverley	08.07.02	John Beverley	Coal miner	19.01.03	
71	Elsie Collinson	21.09.02	George Collinson	Coal miner	18.01.03	
51	Doris Tomlinson	14.09.02	Benjamin Tomlinson	General carter	18.02.03	
45	Female Simms	18.10.02	W Simms	Coal miner	14.01.03	
5	Annie Brown	24.10.02	W H Brown	Coal miner	09,07,03	03.01.04
31	Female Mitchell	16.11.02	J W Mitchell	Coal miner	19.12.02	

79	Male Morris	29.10.02	G Morris	Coal miner	19.01.03	
20	Ada Law	04.01.03	Enoch Law	Coal miner		15.05.03
28	William Carbis	25.01.03	Wm H Carbis	Coal miner		04.02.03
55	John Ryan	18.01.03	James Ryan	Coal miner	10.03.03	
63	Female Gomery	14.02.03	Emily Gomery			24.07.03
18	Female Fleetwood	08.03.03	J A Fleetwood			14.09.03
26	Herbert Williams	27.03.03	Mary A Williams		29.07.03	
75	Sidney Duffield	15.03.03	George Duffield	Coal miner	27.09.03	
25	Charles Wood	06.04.03	Charles Wood	Colliery labourer	26.09.03	
11	Lois Dickens	29.04.03	Samuel Dickens	Coal miner	01.07.03	
33	John Probert	15.04.03	William Probert	Coal miner	24.09.03	
24	Jess Turton	23.07.03	C Turton	Coal miner		28.10.03
23	Emma Attenborough	22.08.03	Isaac Attenborough	Coal miner		
59	Simeon Brown	19.09.03	Wm H Brown	Coal miner	12.03.04	
9	Female Newcombe	12.11.04	Newcombe	Insurance Agent	02.02.05	
17	Female Shearon	24.11.04	Shearon	Coal miner	17.05.05	
37	Female Covell	06.01.05	George Covell	Coal miner		
20	Male Law	09.01.05	Enoch Law	Coal miner		14.06.05
34	Female Barrowcliffe	07.02.05	Barrowcliffe	Coal miner	18.07.05	
61	Male Bate	28.02.05	J Bate	Coal miner	17.05.05	
53	Frances Hayward	24.02.05	E Hayward	Coal miner		06.09.05
5	Male Brown	16.03.05	Wm H Brown	Coal miner		08.04.05
55	Male Bate	20.06.05	T A Bate	Coal miner	09.11.05	
40	Female Spencer	07.06.05	S Spencer	Coal miner	09.11.05	
22	Female Turner	08.12.05	Philip Turner	Coal miner	19.05.06	
59	Female Goodwin	28.12.05	Edwin Goodwin	Coal miner	02.05.06	
33	Male Probert	30.12.05	Wm Probert	Coal miner	12.05.06	
63	George Williams	01.01.06	George Williams	Coal miner		29.01.06
47	Edward Narey	03.02.06	John Narey	Coal miner		05.02.06
21	Wm Freeman	04.05.07	Wm Freeman	Coal miner	13.07.07	
34	Laura Green	30.04.07	James Green	Coal miner	13.07.07	
45	Albert Simms	03.05.07	Wm T Simms	Coal miner	06.07.07	
5	Jane Brown	01.07.07	Wm H Brown	Coal miner	14.12.07	
47	Herbert Narey	17.07.07	John Narey	Coal miner		17.07.07
59	Edward Goodwin	21.07.07	Edward Goodwin	Coal miner	08.01.08	
23	Matilda Ambler	18.10.07	Richard Ambler	Coal miner	24.01.08	
23	Robert Thompson	29.11.07	Robert Thompson	Coal miner		30.12.07
9	Florence Dickens	24.11.07	John Dickens	Coal miner		
18	Wilfred Turton	13.01.08	George Turton	Coal miner	12.05.08	
15	Fanny Walton	10.01.08	David Walton	Coal miner	15.05.08	

17	James Clegg	19.01.08	Ben Clegg	Coal miner	06.04.08	
13	Evelyn Ledger	29.01.08	George Ledger	Coal miner	19.03.08	
49	Robert Trickett	22.02.08	Samuel Trickett	Colliery labourer	30.06.08	
43	John H Hall	06.02.08	Moses H Hall	Coal miner	30.06.08	
14	Rose Fieldhouse	12.02.08	Job Fieldhouse	Coal miner	19.06.08	
33	George Probert	03.03.08	Wm Probert	Colliery shot firer	29.07.08	
73	Louisa Jones	16.04.08	John W Jones	Coal miner	02.12.08	
27	Joseph Mitchell	01.06.08	John Mitchell	Coal miner	09.07.08	
9	Nellie Dickens	20.07.08	Samuel Dickens	Coal miner	14.09.08	
17	Samuel Bartrop	21.08.08	Harry Bartrop	Coal miner		21.08.08
79	Tom Shearon	14.07.07	John Shearon	Coal miner		
11	Florence Jeffery	02.08.08	John Jeffery	Pil sinker		25.02.09
1	Joseph Goodwin	30.09.08	Joseph Goodwin	Coal miner	12.11.08	
30	Fanny Holland	24.09.08	Samuel Holland	Coal miner	08.01.09	
31	Ellen Rolfe	09.10.08	Harry Rolfe	Coal miner		11.09.09
40	John Walstow	20.11.08	Wm H Walstow	Coal miner	29.04.09	
35	Evelyn Horton	02.01.09	Edwin Horton	Coal miner	02.03.09	
49	Olive Walton	19.02.09	David Walton	Colliery labourer	16.05.09	
69	Eliza Stancliffe	23.04.09	Arthur Stancliffe	Coal miner	10.10.09	
7	Irene Brown	27.04.09	Wm H Brown	Coal miner		09.10.09
34	George Elks	30.06.09	Samuel Elks	Coal miner	03.08.09	
59	Ivy Whittaker	19.08.09	Alfred Whittaker	Coal miner		
18	Richard King	17.09.09	Richard King	Coal miner		22.04.10
45	Wm T Simms	08.09.09	Wm T Simms	Coal miner		07.09.10
55	Willette Fox	30.09.09	Harry Fox	Coal miner		30.10.09
18	Edith Turton	01.11.09	George Turton	Coal miner		03.11.09
63	Sarah Hibbert	29.10.09	Mark Hibbert	Coal miner	24.02.10	
33	Nellie Spencer	14.12.09	John Spencer	Coal miner	06.02.10	
25	John Passant	29.10.09	Edward Passant	Coal miner	03.04.10	
71	Charles Cooper	01.01.10	William Cooper	Coal miner		
59	Elizabeth Mitchell	09.04.10	John Mitchell	Coal miner	21.05.10	
51	John Jackson	04.04.10	Albert Jackson	Coal miner		
31	Wm H B Rolfe	17.04.10	Harry Rolfe	Coal miner	14.06.10	
49	Annie Trickett	25.04.10	Samuel Trickett	Colliery labourer	18.01.11	
5	Jesse Brown	10.05.10	Wm H Brown	Coal miner	27.10.10	
79	Annie Cartwright	25.06.10	Ernest Cartwright	Coal miner		25.06.10
26	Mary Chappell	21.06.10	Fred Chappell	Farmer	23.11.10	
47	Vera Narey	23.06.10	John Narey	Coal miner		27.09.10
43	Gladys Senior	28.07.10	Albert Senior	Coal miner	27.10.10	
11	Ethel Jeffery	18.07.10	John Jeffery	Coal miner	12.11.10	
40	Catherine Walstow	05.08.10	William Walstow	Coal miner	02.10.10	
14	Harriet Wates	17.08.10	Thomas Wates	Coal miner		

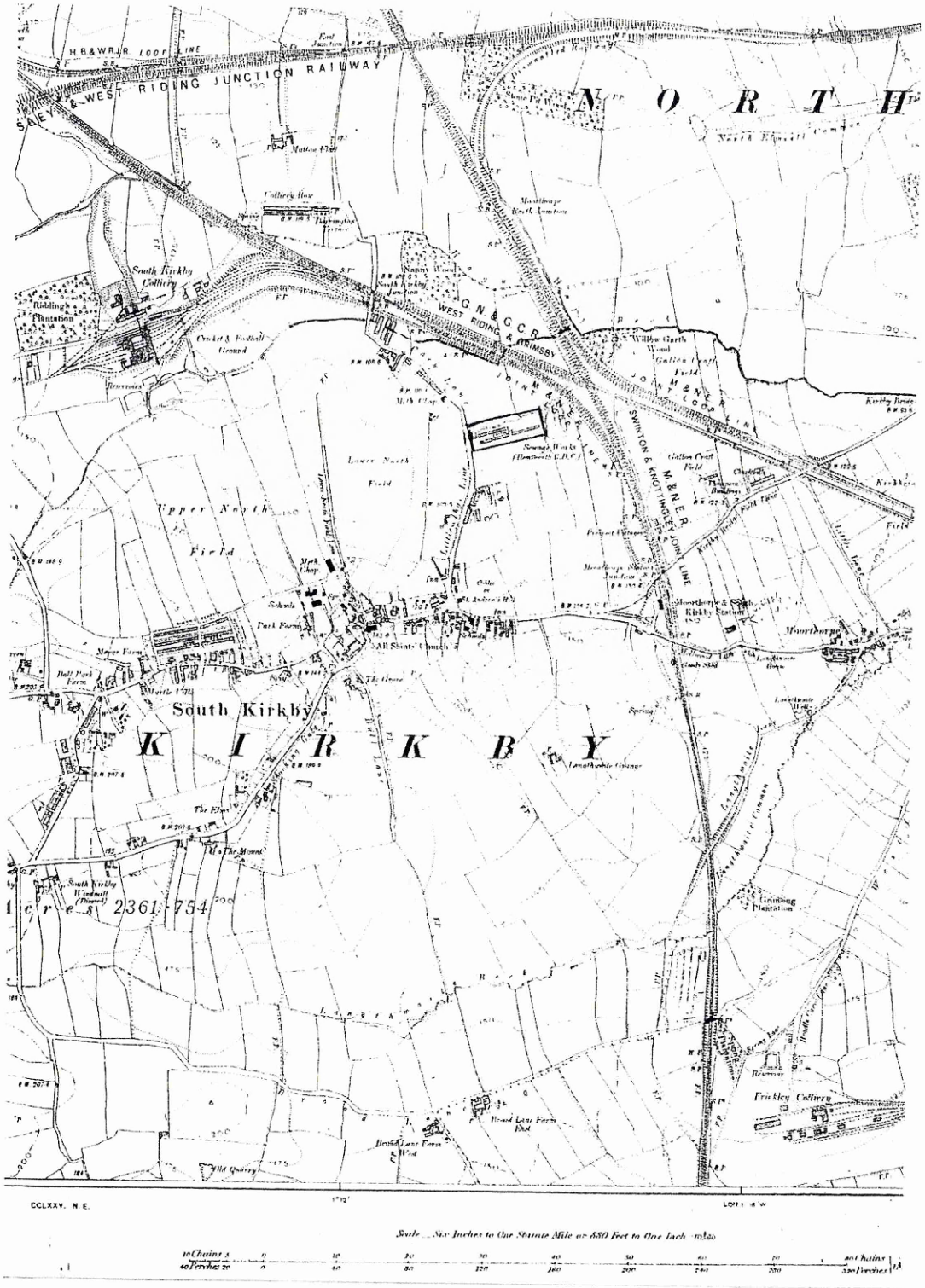
75	Joseph Deakin	07.09.10	George Deakin	Coal miner	16.02.11	
51	Edna Silman	16.09.10	John Silman	Coal miner	04.12.10	
32	Violet Wootton	24.10.10	Alfred Wootton	Coal miner	18.12.10	
27	Frances Harrison	14.11.10	Wm Harrison	Coal miner		
26	Martha Cartwright	15.11.10	George Cartwright	Coal miner	09.01.11	
20	Enoch Brown	27.11.10	Isaiah Brown	Coal miner	18.12.10	
23	Louisa Jones	26.12.10	Edward Jones	Coal miner	28.03.11	
5	Harriet Wright	08.01.11	Neval Wright	Coal miner	08.08.11	
19	Enoch Passant	30.01.11	George Passant	Coal miner	21.06.11	
35	Florence Oxley	22.01.11	Thomas Oxley	Coal miner	13.07.11	
40	Phyllis Fox	22.02.11	Harry Fox	Coal miner	24.02.12	
43	Gilbert Birley	14.05.11	Hamilton Birley	Wheel turner		12.08.11
27	Muriel J Prince	14.05.11	Wm J Prince	Colliery labourer	21.06.11	
22	Joseph L Smith	30.07.11	Agnes Smith			01.10.11
13	Daniel Barker	31.07.11	Alice Barker			24.08.11
10	Charles F Jones	12.08.11	John T Jones	Colliery trammer		28.01.12
71	Florence Cooper	18.09.11	Wm Cooper	Coal miner	22.02.12	

Appendix 3 – Children born at Faith Street according to Parish Registers, but not in Vaccination Registers

Name of child	Date of Baptism	Parents' names	Father's occupation	Status
Ivy Grisenthwaite	20.11.97	Wm & Fanny Grisenthwaite	Coalminer	On 1901 census
Thomas Millard	04.08.97	John & Mary Millard	Coal miner	On 1901 census
Elizabeth Hall	27.10.97	Thomas & Jane Hall	Coal miner	Buried 28.12.98
Harry Millard	22.05.01	John & Mary Millard	Coal miner	
Alfred Scairey	26.06.01	Benjamine & Eliza Scairey	Coal miner	
Samuel Farmery	28.06.01	Tom & Eliza Farmery	Coal miner	Buried 03.07.01
Amos Farmery	28.06.01	Tom & Eliza Farmery	Coal miner	Buried 03.07.01
John Petty	28.06.01	Alfred & Edith Petty	Coal miner	Buried 20.07.01
Rhoda T Simms	28.06.01	Wm & Emma Simms	Coal miner	
Amos Wm Brown	28.06.01	Wm & Ada Brown	Coal miner	Buried 22.07.01
M A Spencer	31.07.01	Lewis & Mary Spencer	Coal miner	
Harriet M Law	01.12.01	Enoch & Emma Law	Coal miner	
Martha A P Ambler	15.12.01	Herbert & Ann P Ambler	Coal miner	
Mary A Senior	16.08.03	Sarah E Senior		Buried 18.08.03
William Pitt	28.10.03	Annie Pitt		
Harriet Goodwin	22.11.03	Joseph & Harriet Goodwin	Coal miner	
Edwin Thompson	25.11.03	Albert & Mary Thompson	Coal miner	
Joseph Turner	16.12.03	John & Mary Turner	Assistant colliery deputy	
Caroline Horton	21.01.04	Edwin & Sarah Horton	Coal miner	
Emma Padforth	31.01.04	Edward & Mary Padforth	Coal miner	
Amy T Simms	12.04.04	William & Emma Simms	Coal miner	
Ann Whysall	20.08.04	John & Lily Whysall	Coal miner	Buried 24.08.04
Sarah E Mitchell	14.09.04	John & Mary Mitchell	Coal miner	
George T Spencer	09.12.04	Lewis & Mary Spencer	Coal miner	
Frances Hayward	29.03.05	Ernest & Elizabeth Hayward	Coal mner	Buried 07.09.05
William H Brown	05.04.05	William H & Ada Brown	Coal miner	Buried 09.04.05
Sarah A Spencer	16.06.05	Samuel & Caroline Spencer	Coal miner	
Thomas A Balch	05.07.05	Thomas A & Elizabeth Balch	Coal miner	
Gertrude Williams	21.08.05*	George & Emily Williams	Coal miner	
Thomas Darley	15.10.05	Wilfred & Louisa Darley	Coal miner	
Gladys Goodwin	28,12.05	Edward & Sarah Goodwin	Coal miner	Buried 1906

The status column shows whether the child was subsequently buried, and for those born before the 1901 census, whether they could be traced on that census in South Kirkby.

Appendix 4 – Map of South Kirkby showing Faith Street (outlined in black)



Faith Street is outlined in black on this map. The colliery can be seen in the top left of the map. The Traveller's Rest inn which was frequented by Faith St residents,is shown due south of Faith Street.

BIBLIOGRAPHY

Primary Sources, Lectures and Reports

Census Enumerators Books for 1871 for South Kirkby, Badsworth, Little Smeaton, Kirk Smeaton, Hamphall Stubbs, Hessle, Hill Top, Skelbrooke, Stubbs Walden, Thorpe Audlin, Upton, West Hardwick, Wintersett, Wragby

Census Enumerators Books for 1891 for South Kirkby, Badsworth, Little Smeaton, Kirk Smeaton, Hamphall Stubbs, Hessle, Hill Top, Skelbrooke, Stubbs Walden, Thorpe Audlin, Upton, West Hardwick, Wintersett, Wragby

Census Enumerators Books for 1901 for South Kirkby, Badsworth, Hamphall Stubbs, Little Smeaton, Skelbrooke, Wintersett

Vaccination Birth Registers for Hemsworth District - BG3/9/2/19, BG3/9/2/20, BG3/9/2/21, BG3/9/2/22, BG3/9/2/23, BG3/9/2/24, BG3/9/2/25, BG3/9/2/26, BG3/9/2/27, BG3/9/2/28, BG3/9/2/29, BG3/9/2/30, BG3/9/2/31, BG3/9/2/32, BG3/9/2/33, BG3/9/2/34

Vaccination Report Books for Hemsworth District - BG3/9/1/1, BG3/9/1/2, BG3/9/1/3

South Kirkby Parish Register of Burials - ref WPD168/1/4/3 - West Yorkshire Archives

South Kirkby Parish Register of Births - WPD168/1/2/2 - West Yorkshire Archives

Kirk Smeaton, Little Smeaton, Cold Heindley, Badsworth Parish Registers of Burials – ref WPD162/1/4 – West Yorkshire Archives

Sanitary Survey of Hemsworth, published 1923 and forming part of a series covering the whole of the WRCC – Ref RD7/1/3/31

Minutes of Hemsworth Rural Sanitary Authority 1872-1893 – Ref RD7/2/1/1

Moorthorpe Cemetery Records (unreferenced)

Minutes of Health Committee of Huddersfield Borough Council – West Yorkshire Archives

File of Newspaper Cuttings held in West Yorkshire Archives – Ref RD6/1/122

Coleman, Dr G E – Hemsworth Rural Sanitary Authority – Medical Officer of Health: Annual Reports, 1888, 1889, 1890, 1891, 1892, 1894, 1895, 1897, 1898, 1899, 1905, Hemsworth

Wiltshire, Dr – Hemsworth Rural District Council – Medical Officer of Health: Annual Reports, 1907, 1908, 1909, 1914

Report of the proceedings of the National Conference on Infantile Mortality, held in Caxton Hall, Westminster, on the 13th and 14th June, 1906, Westminster, King 1906

Thirty-ninth annual report of the Local Government Board, 1909-10, London, Darling & Son, 1910

The declining birth-rate: its causes and effects, being the report of and the chief evidence taken by the National Birth Rate Commission, instituted, with official recognition, by the National Council of Public Morals for the promotion of race regeneration, spiritual, moral and physical, London, Chapman & Hall (1916)

Information from South Kirkby & South Elmsall Family History Society (William Wootton)

Secondary Sources

Alam, N & David, P H (1998), 'Infant and Child Mortality in Bangladesh: Age-specific effects of previous child's death', *Journal of Biomedical Science*, 30, pp 333-348

Archer, C M (1987) *Destruction of the Innocents*, unpublished manuscript

Armstrong, D (1986) 'The Invention of Infant Mortality', *Sociology of Health & Illness, 8,* pp 211-232

Ashby, H T (1922) *Infant Mortality* 2nd Edition. Cambridge, Cambridge University Press.

Beavor, M W (1973), 'Population, infant mortality and milk', *Population Studies,* 28, p243

Blagg, H (1910) *Statistical Analysis of Infant Mortality and its causes in the United Kingdom,* P S King & Son, London

Breschi, M & Bacci, M (1997), 'Month of Birth as a factor in Children's Survival' *Infant and Child Mortality in the Past*, pp 157-173, Clarendon Press, Oxford

Brockington, C F (1966) *A Short History of Public Health,* 2nd ed, J & A Churchill, London

Buchanan, I H (1983), *Infant Mortality in British Coal-Mining Communities,* unpublished PhD thesis, University of London

Buchanan, I H (1985), 'Infant Feeding, Sanitation and Diarrhoea in Colliery Communities, 1880-1911' *Diet and Health in Modern Britain, (Oddy, D J & Miller, D S eds)* 1985, pp 148-177

Clark, A (2003), 'Family migration and infant mortality in rural Kent, 1876-1888' *Family and Community History,* 6, pp 141-50

Davies, C (1988) 'The Health Visitor as Mother's Friend: A woman's place in public health, 1900-1914', *The Society for the History of Medicine,* pp 39-59

Dennis N, Henriques F & Slaughter C (1956), *Coal is our Life*, Eyre & Spottiswoode, London

Dodgson, V (1998), *The Final Conquest of Infant Mortality 1871-1948: A Medical Conundrum. An exploration of the structure of and attitudes towards Infant Mortality in the Sheffield sub-district of Park in the late 19th and early 20th centuries,* unpublished BPhil thesis, Open University

Drake, M (2005) 'The Vaccination Registers: what are they and what can we learn from them?' *Population Studies,* 74, pp 36-54

Drake, M & Razzell P (1997), *The Decline of Infant Mortality in England and Wales 1871-1948: A Medical Conundrum.*, The Open University.

Drake, M & Razzell P (2000-01), *The Infant Mortality Newsletter, 1, 2, 3 and 4.* The Open University.

Dwork, D (1987) 'The Milk Option: an aspect of the history of the infant welfare movement in England 1898-1908' *Medical History,* 31, pp 51-69

Durback, N (2000), 'They might as well Brand us: Working class resistance to compulsory vaccination in Victorian England', *Social History of Medicine,* 13, pp 45-63

Fildes, V (1998), 'Infant feeding practices and infant mortality in England, 1900-1919' *Continuity and Change,* 13, pp 251-280

Friedlander, D (1973) 'Demographic Patterns and Socio-Economic Characteristics of the Coal Mining Population in England & Wales in the Nineteeth Century' *Economic Development and Culture Change*, 20 pp 40-43

Galley, C (2004), 'Social Intervention and the Decline of Infant Mortality: Birmingham and Sheffield, c. 1870-1910', *Local Population Studies,* 73, pp 29-51

Galley, C & Shelton, N (2001), 'Bridging the gap: Determining long-term changes in infant mortality in pre-registration England and Wales' *Population Studies*, 55, pp 65-77

Galley, C, Williams N, Woods R (1995) 'Detection with Correction: Problems in Assessing the Quality of English Ecclesiastical & Civic Registration Data' *Annales de Démographie Historique 1995* pp 161-183

Galley, C & Woods R (1999) 'On the Distribution of Deaths during the First Year of Life' *Population: An English Selection,* 11, pp 35-60

Garrett, E & Reid, A (1995) 'Thinking of England and taking care: family building strategies and infant mortality in England and Wales, 1891-1911' *International Journal of Population Geography,* 1, pp 69-102

Garrett, E & Wear, A (1994) 'Suffer the little children: mortality, mothers and the state' *Continuity and Change,* 9, pp 180-184

Giesen, C A B (1995), *Coal Miners' Wives: Portraits of Endurance,* The University Press of Kentucky

Graham, D (1994) 'Female employment and infant mortality: some evidence from British towns, 1911, 1931 and 1951' *Continuity and Change*, 9, pp 313-346

Haines, M R (1995) 'Socio-economic differentials in infant and child mortality decline, England and Wales 1890-1911' *Population Studies,* 49, pp 297-315

Hart, N (1998) 'Beyond infant mortality: gender and stillbirth in reproductive mortality before the twentieth century' *Population Studies,* 52, pp 215-229

Hey, D (1996) *The Oxford Companion to Local and Family History,* Oxford University Press.

Housden, L G (1939) *The Art of Mothercraft: National Association for Maternity and Child Welfare Centres and for the prevention of Infant Mortality*, London

James, T (2003), 'Neonatal mortality in Northamptonshire: Higham Ferrers 18801890', *Family and Community History* 6, pp 129-139

Laxton, P (1989) *Urbanisation and Infant Mortality in England: A long term perspective*

Lee, C H (1991) 'Regional inequalities in infant mortality in Britian, 1861-1971: Patterns and hypotheses', *Population Studies,* 45 (1991), pp 55-65

Lewis, M (2001) 'Milk, Mothers and Infant Mortality' *Twentieth Century Sydney – Studies in Urban and Social History (ed Jill Roe),* Southwood Press, Sydney, pp 193-207

Lomax, E R (1972) *Advances in Paediatrics and in Infant Care in nineteenth century England,* PhD thesis

Lithell, U-B (1981) 'Breast-feeding habits and their relation to infant mortality and marital fertility', *Journal of Family History,* 6, pp 182-194

Loudon, I (1991) 'On Maternal and Infant Mortality 1900-1960' *Social History of Medicine,* pp 29-49

Marland, H (1993) 'A pioneer in infant welfare: the Huddersfield scheme 1903-1920' *Social History of Medicine,* 6, pp.25-50

McLeary, G F (1933) *The Early History of the Infant Welfare Movement,* H K Lewis & Co, London

Mooney, G (1994) 'Still-births and the measurement of urban infant mortality rates c. 1890-1930' *Local Population Studies*, 53, pp 42-52

Morgan, N (2002) 'Infant mortality, flies and horses in later-nineteenth-century towns: a case study of Preston', *Continuity and Change,* 17, pp 97-132

Newman, G (1906), *Infant Mortality a Social Problem,* Methuen, London

Oeppen, J & Garrett, E (1998) *The Measurement of Infant Mortality,* Cambridge Group for the History of Population and Social Structure

Phillips, J & French, M (1999) 'State Regulation and the Hazards of Milk 1900-1939' *Social History of Medicine,* 12, pp 371-388

Pinnell, A & Mancini, P (1997), 'Gender Mortality Differences in Italy from Birth to Puberty 1887-1940' *Infant and Child Mortality in the Past, (Bideau, A, Desjardins, B, Brignoli, H P eds)* pp 73-95, Clarendon Press, Oxford

Preston, S H (ed) (1978), *The Effects of Infant and Child Mortality on Fertility,* Academic Press, London

Razzell, P (1998) *Slaughter of the Innocents: Infant Mortality in England, 1872-1911*, OU material.

Reid, A (1997), 'Locality or class, Spatial and social differentials in infant and child mortality in England & Wales 1895-1911' *Infant and Child Mortality in the Past, (Bideau, A, Desjardins, B, Brignoli, H P eds)* pp 129-155, Clarendon Press, Oxford

Rollet, C (1997) 'The Fight against Infant Mortality in the Past: An International Comparison' *Infant and Child Mortality in the Past, (Bideau, A, Desjardins, B, Brignoli, H P eds)* 38-57, Clarendon Press, Oxford

Rusiecki, P (1993) '*The Plough and the Pick: the industrial transformation of two Yorkshire villages',* Wakefield Metropolitan District Council Libraries and Information

Shelton, N J (2000) *Childhood Mortality and the Public Health Response in Victorian and Edwardian Devon and Cornwall,* PhD thesis

Smith, S (2002), *'Who you are or where you are?' Determinants of Infant Mortality in Fulham 1876-88,* paper given in 2002 at PICs conference in Newcastle

Szreter, S (1994) 'The importance of social intervential in Britian's mortality decline c. 1850-1914: a re-interpretation of the role of public health' *Social History of Medicine*, 1 pp 1-37

Szreter, S (1997) 'Economic growth, deprivation, disease and death: On the importance of the politics of public health for development' *Population and Development Review,* 23, pp 693-728

Szreter, S & Hardy, A (2000), 'Urban Fertility and Mortality Patterns' *The Cambridge Urban History of Britain*, (Cambridge: CUP), M Daunton (ed)

Thornton, P & Olson S, (2001), 'A deadly discrimination among Montreal infants, 1860-1900', *Continuity & Change*, 16, pp 95-135

Watterson, P A, (1986), Role of the environment in the decline of infant mortality: an analysis of the 1911 census of England and Wales, *Journal of Biosocial Science,* 18 pp 457-70

Watterson, P A (1988) 'Infant Mortality by Father's Occupation from the 1911 Census of England & Wales' *Demography* 25, 289-306

Williams, N (1992) 'Death in its Season, Environmental and the Mortality of Infants in nineteenth century Sheffield' *Social History of Medicine*, 1992, 71-94

Williams, N & Galley, C (1995), Urban Rural differentials in infant mortality in Victorian England, *Population Studies,* 49, (1995) pp 401-20

Williams, N & Mooney, G (1994), 'Infant Mortality in an 'Age of Great Cities': London and the English provincial cities compared, c 1840-1910' *Continuity and Change*, 1994, pp 185-212

Williamson, P and Woods, R I (2003), 'A note on the Fetal-Infant Mortality Problem', *Journal of Biomedical Science,* 35, pp 201-212, Cambridge University Press.

Woods, R I, (1997) 'Infant Mortality in Britian: A Survey of current knowledge on historical trends and variations' *Infant and Child Mortality in the Past, (Bideau, A, Desjardins, B, Brignoli, H P eds),* Clarendon Press, Oxford, pp 74-88

Woods, R I, Watterson, P A & Woodward, J H (1988-9) 'The causes of rapid infant mortality decline in England & Wales 1861-1921 Part 1, *Population Studies,* 42 (1988) pp 343-66, Part II, *Population Studies,* 43, pp 113-132.

Woods, R, Williams N, Galley C (1993) 'Problems in the Identification of Long Term Trends & Geographical & Social Variations', *The Decline of Infant Mortality in Europe 1800-1950: Four National Case Studies* - Carlo A Corsini and Pier Paolo Viazzo (eds) Florence: UNICEF Istitue degli Innocenti di Firenze, pp 35-50

Woods, R (2000) 'The Origins of the Secular Decline of Childhood Mortality', *The Demography of Victorian England*

Woods, R (2000) *The Perinatal Mortality Problem in English Historical Demography* (hand out at lecture in 2000)

Wrigley, A E (1977), 'Births & Baptisms: the use of Anglican registers as a source of information about the numbers of births in England before the beginning of Civil Registration', *Population Studies* 31, pp 281-312

Yorkshire Arts Council (1988), *'Privy to Privatisation: housing under the hammer'* South Kirkby and South Elmsall (no author's name given)

Additional Background reading

Zola, E (Translation: 1993), *Germinale,* Oxford University Press